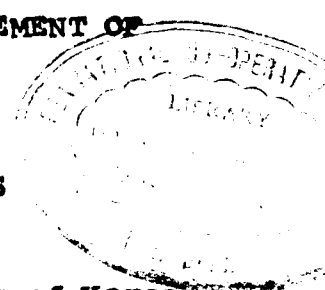


FIRST ICA TRAINING COURSE ON STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA , 1986 - 87

PROJECT PROPOSALS SUBMITTED BY PARTICIPANTS

- 
1. Project on Chinese Cabbage Marketing, Republic of Korea ..
  2. Group reports on above project. ..
  3. Integrated Area Development Project, Chowol, Korea ..
  4. Group reports on above project ..
  5. Project on Establishing a Mini Oil Palm Mill in  
Kuala Langat, Malaysia ..
  6. Group reports on above project ..
  7. Project Study of Marketing of Palay for Baras Baras Sn  
Tarlac, Philippines ..
  8. Group reports on above project. ..
  9. Fishermen's Cooperative Sigangang, Siasi, Sulu,  
Philippines. ..
  10. Group reports on above project ..
  11. Project on Rubber Plantation in selected areas of Ruwanwella  
AGA Division, with special emphasis on production of  
Quality smoked rubber sheets in Sri Lanka ..
  12. Group reports on above project ..
  13. Project on the Establishment of a Feed Mill in Thachang  
Agrl Coop, Thachang Dist., Singburi, Thailand ..
  14. Group reports on above project. ..
  15. Project on Nong Wai Agrl Cooperative, Thailand ..
  16. Group reports on above project ..
  17. Brief comments on projects prepared by participants ..
  18. Memorandum by Project Director on revision of projects  
based on comments by experts and group discussions ..

FIRST

ICA TRAINING COURSE FOR STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA

NEW DELHI / BANGKOK / TOKYO / SEOUL

1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

Project Title: Integrated Paddy Processing  
and Marketing Project  
Country: Indonesia  
Prepared by: Mr Samsul Arief

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and  
Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.

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## 1. S U M M A R Y

1. The Jatisari's KUD is Located in Jatisari Village of Karawang district in Western Java, about 130 km to the East of Jakarta.

The Jatisari KUD are covered 6 villages in the sub district of Jatisari with agricultural area 2,905 Ha, Out of this 1,999 Ha or 69% are irrigated area and 906 Ha are high land ( non irrigated ).

- Total population in the Cooperative ared are 20,030 persons with 3,668 house hold and 67,9% of the population are farme rs, 24,2% small traders and others 7,8%. Only 50% of the farmers become members to the Jatisari Kud.

2. Cropping pattern in this area according water irigation available, to the farmers cultivated of paddy twice a year and grain (soy been or green been) one time a year. Total production of paddy approximately 24,667 m tons out of this about 25% or 6,167 m ton for own consumption and 75% or 18,500 mton going out to the market.

Averages the cultivated area each the farmers about 0,9 ha with income of the farmer from their paddies

Rp. 1,119,276,-. The marketing pattern of paddy were happening, the farmers will sell their paddies to every body else with highest selling price at the field after finish harvest, there is no processing before.

The Jatisari KUD must be purchase of paddy when the selling price of paddy lower than floor price.

When the farmers will be proces their paddies the cost of processing Rp. 15,-/kg of paddy and by product as bran and husk for the miller.

This meant there are not any processing by product of the paddy, so there are not addition income from by proo

duct of rice to the farmers.

3. The role of cooperative in the servicing to the member farmers through business activities as input supply with lower price, credit, consumers and procurement of rice or paddy.

The purpose of the procurement of paddy by KUD is to secured selling price of paddy is this area. Where the KUD will be sell their paddy to the Dolog with sold price based on regulated price by the government.

There are not link age activities of KUD to the farmers from input supply, credit and marketing.

Further with the integrated paddy processing and marketing by KUD should be implemented to increase participation members farmers and increase their income.

4. The Purpose of the Project are paddy processing in to price and Bran process into pellet with better marketing activity.

The project expected will increase of paddy by KUD to the members farmers 18-20%. so can increase income of the member farmers.

5. The project component consist of :

- Set up New Rice Milling wints 2ton/hr capacity,
- Set <sup>u</sup> up New pelleting unit 0,55 ton/hr peller.
- Development marketing of rice.

Total investment cost of the project Rp. 529.537.000,- with source of capital 12% equity and 88% short and long term Loan from Government Bank or Cooperation Bank (Bukopin).

According the financial analysis the profit of the project after tax 23,47% and internal rate of return is 28.17%. The Break <sup>event</sup> point of the project 59,1% when rate capacity of machine 90%.

## 2. BACKGROUND

### 2.1. Background.

Indonesia since 1985 has started self-supporting in rice. Currently, Indonesia's paddy production has reached 26,3 million tons which involving approximately 10,93 millions of farm operations where 50% of them operate in rice fields for the area of less than 0.75 ha for each farmer.

With the increasing of paddy production per ha and followed by the increase of rice plant area especially outside java, it is expected that in future Indonesia, the paddy production is going to grow and grow again and possibly for export purpose.

Rice stock in market will be abundant, and the customers shall freely choose rice in conformity with the quality they need. With the better rice quality, the rice shall reach the market quicker with the better price offer, of course.

In line with the increasing of paddy production and more competition in rice market, it is demanded that there should have a certain method to improve paddy processing, therefore, the best quality in rice will be obtained. It is also expected that by improving the paddy processing performed by the farmers through the cooperative, the farmers' income will also increase.

To improve paddy processing in modern way, and in order to achieve good quality in rice, the industrial countries have played an important role, namely, by operating rice milling machine equipped by whitening machine as well as Rotary Shifter, in this case, it is easy to differentiate between whole rice, broken or bran (by product).

In the present, the use and the process of bran still in great deal, however, the amount of rice plant of by product is in great numbers, for instance, Straw, Husk and Bran. Processing technology and the marketing of the product are very determine for the value of the said by product.



One of the paddy by products is bran which has been in much used by the manufacturers for either oil bran process or pellet.

With integrated processing paddy and pelleting, it is expected that the value of the said rice plant product shall be increased, on the other hand, the income of farmers will also increase.

## 2.1. Area of Project.

The Jatisari KUD is located in Jatisari Subdistrict of Karawang district in West Java, about 130 KM of Jakarta.

The KUD area covers 6 villages in the subdistrict with total an agricultural area 2.905 Ha, out of this 1.999 Ha or 69% <sup>were</sup> irrigated area and 906 Ha non irrigated. In general the condition of the area project as under.

### 1. Population.

Total population in these 6 villages area of the KUD as many as 20.030 persons with 3.668 house hold. The following Number of population in the each villages.

Villages	No. of house hold	Population		
		Males	Females	Total
Jatisari	771	1.671	1.710	3.381
Cirejag	595	1.491	1.430	2.921
Mekarsari	667	1.800	1.790	3.590
Telasari	665	1.600	1.701	3.301
Pacing	704	2.144	2.184	4.328
Sukamekar	820	1.188	1.321	8.709
T o t a l	3.668	9.894	10.136	20.030

Sources : Karawang District Office, 1985.

The distribution of population in these area is as follows :

Job description	Number house hold	Percentage (%)
1. Farmers	2.492	67.9
- Owners	43	1.2
- Tenant	1.096	29.8
- Farm Labours	1.353	36.8
2. Small araders	890	24.2
3. Gov.officer	102	2.7
4. Employees	184	5.0
Total :	3.668	100

## 2.2. Agricultural area and Production.

All of area unity in those 6 villages 2.905 Ha. Out of these 1.999 Ha irrigated area and 906 Ha non irrigated.

According with soil and water irrigation available so in generally the farmers <sup>were</sup> cultivation the paddy twice in a year beside it also Soy bean and green bean.

Cropping pattern of the farming that has been doing in a year as follow.

Cropping pattern	Month
Paddy I	Nov - Feb
Paddy II	Mth - June
Soy bean or green bean	July - Oct

During five year the production of paddy reachable by average 6.17 M Ton/Ha/season of paddy dry har-

vest.

The following number paddy produce and time harvest in these area as below.

Villages	Land area (Ha)	Production /year (M Ton)	Time Harvest	
			I	II
Jatisari	220	2.715	Feb - March	July-Augt
Cirejag	205	2.529	Feb - March	July-Augt
Pacing	265	2.653	Feb - March	July-Augt
Sukamekar	584	2.591	Feb - March	July-Augt
Mekarsari	215	2.270	March-Aprl	Augt-Sept
Telorsari	210	7.206	March-Aprl	Augt-Sept
T o t a l	1.999	20.964	Feb - April	July-Augt

Beside cultivation above the farmers also has plained their dry land with some pond fish, vegetable and mushroom. But not all the farmers are doing cultivation such as above depend upon money and land of the farmers.

Number areal of the pond fish in these area about 75.1 Ha with 241 fishers and yearly production 22.6 MTon, but when were looked in all of area Karawang's district development of pond fish are until 10.924 Ha with number of farmers 2.707. The potential to increace production of fish with the intensification of fish by fooding the best quality af food and regularity by keep intensive more so can increase income of the farmers.

And so development cultivation of mushroom in these area with using by product af the paddy as straw also can increase activities of the farmers and can

rising income of the farmers.

### 2.3. Processing and Marketing Agricultural Produce.

In generally farmers will sell their paddy as soon as finish their harvest time without any of processing before. According to the cropping pattern, so the farmers will sell all their paddies at first season, but at the second season only 53% of total their paddy will be sold and 47% for the home consumption during a year.

Within total paddy produce at Jatisari KUD were sold every year as many as 18.871 Mton of paddy dry harvest.

The Marketing pattern of paddy were happening in Jatisari's KUD are the farmers will sell their paddies to everybody else with highest price and in generally are higher than floor price of paddy by Government.

When it happens the price of paddy lower than floor price must be the farmers will selling their paddies to the KUD as price as the floor price it is according to the quality of paddy.

Procurement system of paddy by the KUD were done in pooling centre that were coordinating by farmers group and then were transporting by truck KUD itself for the next processing.

In the paddy processing to be rice, very often the KUD process the paddies in the private milling with cost Rp.15,-/kg of paddy and the bran and husk for the millers, this situation is because the rice milling of KUD has the lower capacity and rendement also is low.

The rice marketing has been done by KUD to Dolog.

as price as floor or to the free market at Jakarta. The different selling price to Dolog and free market about 13%-22% then floor price. During 1981-86 the selling price of rice by KUD to Dolog and Free market can be show in the table.

#### The Rice milling Facilities.

In the areal working of KUD there is already a rice milling with a little capacity an in general only used for processing their paddies to consumption their self and itis not for commercial.

And so with the using rice milling performance is still low and quality of rice not so good.

Capacity and ownership of rice milling in Jatisari KUD area as follow :

Items	Huller type	Rice milling units
1. Capacities	0,5 T/hr	1,0 T/hr
2. Owners		
- Individual farmers	14 unit	-
- Private comp.	-	5
- Jatisari KUD	-	1
3. Daily average production	1,5 Ton	4 Ton
4. Annual Average prod	3,150 Ton	4,800 Ton
5. Cost of milling/kg	Rp.12,50,-	Rp. 15,00,-
6. Randement	65%	65%

According data's above only 26,6% of total paddy production can process in the areal of KUD and 74.4 % of paddy will be processing out of areal Jatisa-KUD.

Utilisation by product of the paddy.

The other product of paddies as straw, husk and bran still not using well and in generally just the bran can sell Rp.100,-/kg, being small broken Rp220,-/kg. Straw of paddy few of the farmer used for mushroom cultivation and husk still can't sell in the reasonable price.

Estimate by product of paddy in these area as follow:

Straw/year	24.667 Ton
Husk/year	5.180 Ton
Bran/year	1.726 Ton

2.4. The farmers organization.

2.4. 1. Farmers group.

According with the activities of farmers than in the villages the farmers were putting together a team of farmers to conduct problem solving their activities.

The purpose of farmers group is to collect information in relation with production of paddy or other activities in these villages and also for easier informing from Agricultural officers about technology production of paddy.

Every units of farmers group has many members such as 30 - 60 person farmers.

Each farmers group is organised by the leader group, secretary and treasury.

The following member of Farmer group in the Jati-sari KUD areal :

Names of group	Number (group)	Total members
1. Farmer group	31	2.106
2. Mitra Cai group	17	2.106
3. Credit group (KCK)	7	639
4. Fisheries group	3	18

From those farmers group above are not all of the groups and the members become members of cooperative. (Jatisari KUD) and approximately 50% of total groups and their members become members of Jatisari KUD.

#### 2.4.2. Jatisari KUD Situation.

##### 2.1. Membership.

The total of the members of cooperative (jatisari's KUD), in 1985 are 1.083 house hold or 49% from all the population of this area. The growth of membership during the first set up of KUD until 1985 is 7.8%/year and a big part of the members of KUD are farmers their self.

The development membership of KUD 1981 - 1985 shown in table.

##### 2.2. Jatisari KUD activities.

In their activity such as serving to the members, the KUD also doing business such as

- Procurement of paddy or rice.
- Input farm supplies.
- Credit (KCK).
- Consumers.
- Rice milling units.



## - Transportation.

The total volume of business from year has up and down. During 1981-1985 performance business of Jatisari KUD can be shown in table

While in 1985 volume of business was reachable Rp. 1.414.618 thousand and detail are followed :

unit : Rp.000

Business activities	Volume of business	Percentage (%)
Procurement of rice	Rp. 1.124.117.	79,5
Input supply	" 133.424.	9,4
Consumers	" 135.523.	9,5
Credit (KCK)	" 3.917.	0,3
Rice milling units	" 6.981.	0,5
Others	" 10.656.	0,8
<b>T o t a l</b>	<b>Rp. 1.414.618.</b>	<b>100,0</b>

Based on the data's above, showing that the business in procurement of rice is a biggest activity by KUD.

In generally KUD were not processing their paddies it self but to mill it outside of the cooperative. beside it after drying of their paddies the KUD direct sold to Dolog without any processing before So they don't have additional income from procurement of paddy or rice.

### 2.3. Working Capital.

The working capital of the KUD composed of savings, reserve, borrowings and grants from the government.

The biggest is the borrowing representing 67.4% of the total capital in 1985 and reserves 16.4%, saving 5,5%.

During 1981-1985 sources of working capital Jatisari KUD Shown in table

### 2.4. Physical facilities and equipment.

As a helping facility and equipment that KUD has in carrying out activities are as followed:

I t e m	Unity	Spec	Capacity
Land	1	5.200 m2	-
Office Building	1	300 m2	-
Drying area	1	986 m2	-
Drying machine	1	Lister	20 m Tcn/day
Drying machine	1	Satake	3.5 m Tcn/day
Drying machine	1	iseki	1.5 m Tcn/day
R.M.N.	1	Satake	1 m Tcn/days
Tractors	3	-	10 Ha/days
Truck	2	Colt diesel	2 MT
Vehicle	5	Honda	-
Minicars	2	Mitsubishi	-
Office Equipment	-	-	-

### 2.5. The Structure Organisation

The organisation of Jatisaris KUD composed of the members Board of directors, Board of supervisors,

manager and staff. All the componen are jointly responsible for the organisation, administration and management of the cooperative.

Board of directors and board of supervisors elected by general meeting.

Board of directors who are responsible for the formulating of cooperative policy and decision making. Ass well as the selection and appointment of the managers by Board of directors, Who are responsible for intire operation of cooperative under guidance and the supervision of the board directors.

Board of supervisory is responsible for the auditing and the controlling of the performance of the board of directors.

Total personnel board of directors, board of supervisors and manager, and staff as followed.

Board of Directors	: 3 persons.
Board of Supervisors	: 4 persons.
Board of advisory	: 3 persons.
Commisarity members	: 6 persons.
Manager	: 1 persons.
Staff	: 28 persons.

The structure organization of Jatisari KUD as shown in figure.

- 2.5. *Problem faced by the Project* Problem that has been relating with the increasing activities and income of the member fatmers of Jatisari KUD.

According to the facts, So average the cultivation each family is 0.9 Ha where a big part of it has planting paddy twice a year and total production of each family in a year is 11.106 kg paddy.

In generally, at the harvesting time the farmers sell their own paddy in the field without processing before, and the price usually higher than floor price or Rp. 120/kg (M.C.26%).

While the farmers are processing their paddy to be rice of course they can have additional income about 28% and another income as bran and husk can be using product.

Decreasing of processing cost and improving marketing system are impossible to do by the individual of the farmers.

It can be do just by the doing together or in cooperative.

The problems that farmers have :

1. The limited money of the farmers.

The farmers will sell their paddy as soon as possible after finished harvest time because the farmers needs money, To plant his plantation is next planting season.

2. The relationship between the farmers and the cooperative are still not good and the farmers doesn't trust the cooperative in its handling the farmers product are still not showing a reality increasing income, so their participation are still low.

3. There is no circle among the activities of credit, input supply, processing and marketing of all their production.

4. Even the performance of Jatisari KUD in this last year as already shown the good performance, but there is still the very limited working capital of cooperative and the facilities of processing paddies that they have.

5. Still can find 50% from the farmers there are still not become the members of the cooperative, so there is a handicape in mobility of the activity of the

cooperation it self.

*Need and Justification for the Project.*

2.6. The project purposes in increasing activity of the Jatisari KUD.

As we know that the activity to increase income of the members farmers should be through Integrated Co-operative System of the cultivation of paddy such as:

1. Integrating activities to contribute increased agricultural production and form income by the:
  - Guidance and conseling to the members farmers in doing their forming.
  - The preparation of credit to the members farmers as much as they need and make it in the sharp time.
  - By preparing input supply with lower price.
2. Supplemently to the KUD's management in their serving to the members.
3. Set up the paddy processing and by product processing.
4. Increasing the skill of the marketing of rice by KUD not only selling their product to Dolog out also to the free market.

### 3. Integrated Paddy Processing and Marketing

#### 3.1. Project objective.

As indicated in the statutes of KUD Jatisari the objective of the cooperative is to promote the welfare of its members. In that line the purposes of implementing this project are as follows :

1. To increase the income of the farmer who is member of the cooperative through an integrated effort comprising guidance/information, credit, channelling of production facilities, processing and marketing.
2. To promote participation and number of members.
3. To develop the capability of the cooperative's management staff in carrying out its business activity.
4. The setting up of paddy processing and bran processing facilities for making pelletized fish food.
5. To develop the capacity of rice supply and marketing in the general market.

#### 3.2. Project area.

##### 1. Location.

The project for setting up the paddy processing and fish food pellet manufacturing unit will be located next to the office of KUD Jatisari, Kecamatan Jatisari, Kabupaten Karawang. The project's work area covers six villages at Kecamatan Jatisari i.e. Jatisari, Cirejag, Mekar Sari, Sukamekar.

##### 2. Land and climate.

The project area covers agricultural land consisting of 1999 ha irrigated rice fields and 906 ha dry land which are cultivated by 2036 farmers who own and work the land themselves.

Based on the amount of monthly rainfall observed during the 1981 - 1985 period, the average annual rainfall is 1495 mm and the highest rainfall occurred in January i.e. 298 mm and the lowest in July i.e. 4 mm.

The days of rain averagely numbers 7 days per month, the rainy months being October until April, whereas the dry months between May and September.

The temperature ranges between 27° and 31°C and humidity in the range of 77 - 89%.

### 3. Transportation.

The road infrastructure that exists within the project site is good as KUD Jatisari is located on the side of the main road that links the province of Jawa Tengah (Central Java) and Jakarta.

Asphalt and stone laid roads connect KUD Jatisari and the villages within its work area.

The average distance between the processing site/KUD office and the villages is about 8 km.

### 3.3. Project components.

The project consists of :

1. The setting up of a new paddy processing unit with 32 tons/day capacity and the repair of the old rice milling machine of 16 tons/day capacity, so that the expected total milling capacity would be 48 tons/day.
2. The setting up of a bran processing unit (by product) for producing pelletized fish food with a capacity of 8 tons/day.
3. Augmentation of supply and marketing pattern of rice.

#### 3.3.1. Paddy processing.

##### 1. Capacity.

Based on the rice production pattern in the KUD project work area the planting of rice occurs a year with average harvest of 6,17 tons dried paddy per ha or 5,3 tons milled dried unhulled rice.

The rice fields covers an area of 1,999 ha with a total yearly production of 21.190 m/tons. An amount of 25% of the rice production in this area is consumed locally and 75% is sold in the market or around 15.892 tons of milled dried paddy. In view of the presently existing rice

mills within the project area it is estimated that 70% of the paddy surplus can be processed by KUD Jatisari.

Rice milling capacity required by the cooperative would be 47 tons/day, this can be achieved by installing a new milling machine of 32 tons/day capacity and repairing the old milling machine of 16 tons/day capacity.

Besides the above, drying facilities are also needed for drying paddy prior to processing.

Before being processed the paddy must have a water content of 14%, so the harvested paddy with 24% - 26% water content must be dried until 14% water content is left and the process takes 3 days of sundrying but if an artificial drying machine is used it will only take 20 hours.

## 2. Alternative choice of technology.

To obtain good quality rice each process in its production must be well executed. The rice milling process in the picture shows a simple process but which requires preciseness in executing each and every process.

The choosing of drying method, husking method as well as whitening are very dependent on available technology with reasonable cost. Therefore choice making must be guided by the following considerations :

1. In overall the output of the rice milling machine must show good performance.
2. The machine must be easy to operate and easy to maintain (control process).
3. Availability of spareparts must be guaranteed with good after sales service.
4. The machine must be available and made domestically.

Based on the above provision it is expected that the choice of a rice milling machine with rubber roll husking type and with two stages of whitening machine, that is abrasive type and friction type can produce rice of good quality with high returns/profit.

Design and model of the machine can be seen in the picture.



### 3. Raw material and product.

The raw paddy is obtained from the cooperative members in the form of dried harvest as well as milled dried paddy. Based on the data as per table paddy production by the farmer per year.

The required amount of paddy for processing and the amount of rice produced each month is as specified in table

Dried paddy harvest of 26% water content after being dried has a 14% water content and in the process will undergo a 14% - 15% weight decrease.

Whereas paddy of 14% water content after being processed result in :

- Yield	= 70%
- Whole rice	= 65%
- Broken rice	= 3-5%
- Bran	= 8%
- Husk	= 20%
- Polish Percentage	= less 8%

### 4. Processing/production method.

#### 1. Drying:

Paddy received from the farmer is dried until the water content is reduced to 14%. Drying is done under the sun (sun drying). Explanation of different types of drying system is shown in appendix I.

#### 2. Paddy cleaner.

The dried paddy is weighed and fed into the paddy cleaner through the feeding hopper for purpose of separating the paddy from dirt, sand.

#### 3. Paddy husker/separator.

The already clean paddy is fed into the husker for removing the husk by means of a rubber roll husking type. After that the husked paddy (brown rice) is separated from the husk by the separator.

#### 4. Whitening machine.

The brown rice already separated from the husk is fed into the control tank by means of the bucket elevator.

The control tank functions as a quantity controller of the brown rice to be fed into the whitening machine.

The process in the whitening machine consists of two stages i.e. by abrasive roll and friction roll with white rice and small amount of broken grains as the end product.

After the whitening process is completed, the bran is separated from the whole rice through the Bran Collecting Cyclone.

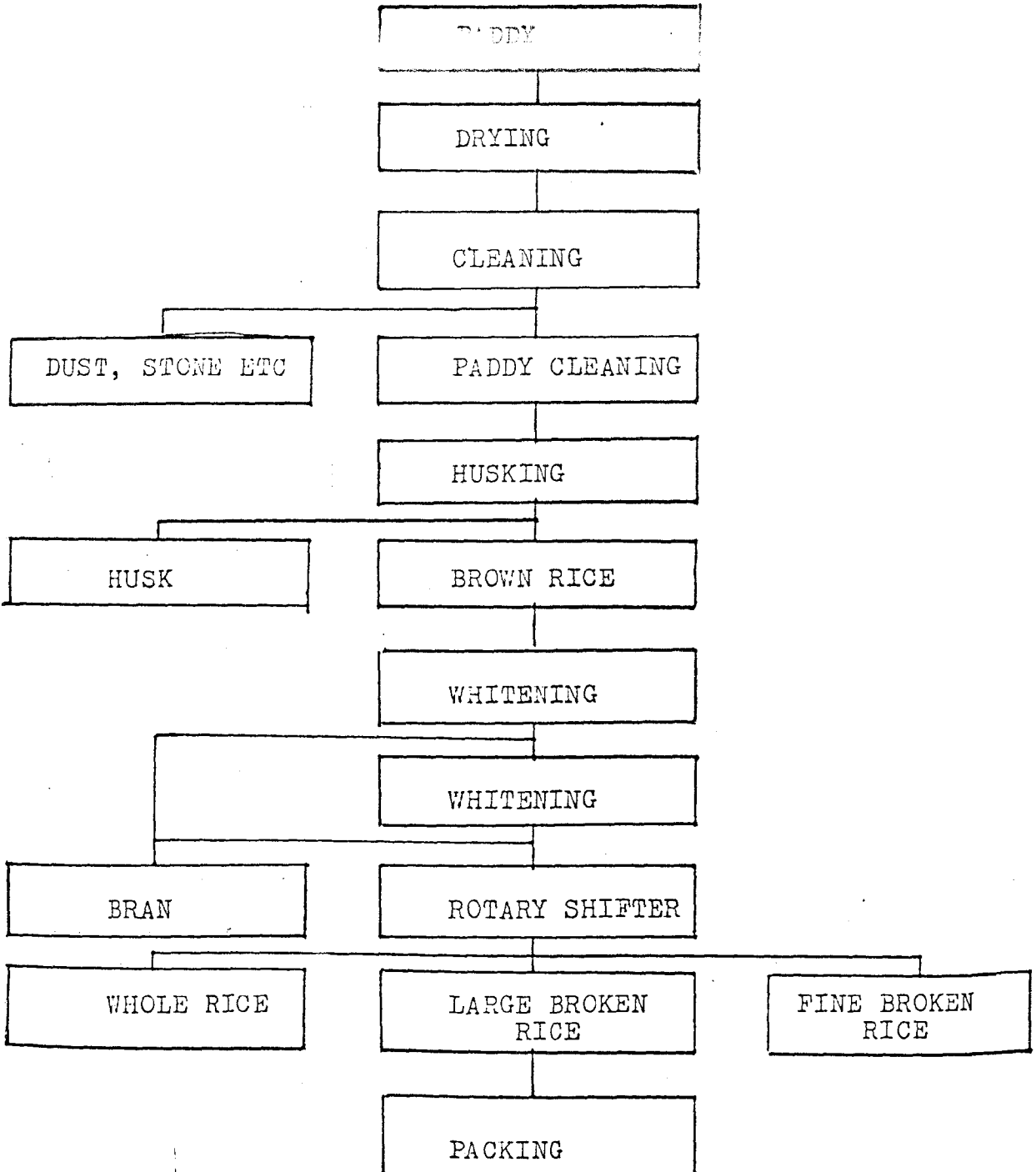
#### 5. Grading.

The white rice produced by the whitening machine is cleaned and after that it goes through the Rotary Shifter to separate between whole rice, large broken and fine broken rice. Thus with this machine any required quality of rice can be produced with the Grading Machine the abovementioned three qualities of rice are then separated and filled into gunny bags.

#### 6. Packing.

The rice which has been separated according to the required quality is into gunny bags of 100 kgs weight each.

Explanation of the flow process can be seen in picture

Paddy Processing Chart

Specification of machinery & equipment required

Description	Model	Quantity
1. Feeding hopper	-	1
2. Paddy drier	Pc.2Q	1
3. Bucket Elevator	A.E.	5
4. Paddy Husker	HC. GBV	2
5. Separator	RPS 10A.	2
6. Rice whitening	RBS 15	2
7. Rice whitening	RMB 10	1
8. Bran Suction Fan	-	1
9. Bran Collecting Cyclone	-	1
10. 2 ways distributor	-	2
11. Dust Section Fan	-	1
12. Control Tank		3
13. Rotary Shifter	ST 324R	1
14. Rice Grader	RG 2C	1
15. Tank	A E.	1
16. Bag Sewing Machine	-	1
17. Engine	4 BDI	1

The Price (Instalation & Araining Operator) Rp.120.000.000,-

\* Turnkey project price.

## 3.3.2. Pellet Processing.

## 1. Capacity.

Based on the amount of bran available in the project area it is estimated that 1697 m/tons can be obtained annually. Whereas the bran (by product) product comes to 890 m/tons. With total working days of 240 days it is estimated that the required capacity of pellet maker should be 8 tons/day or 1920 m/tons of pellet per annum.

## 2. Site (location).

This pellet making project is located near the rice Milling Unit and is so arranged in order to save transportation cost of the bran besides which the availability of fresh bran can be guaranteed.

The lay-out of the processing unit is as shown in the picture.

## 3. Raw material and Product.

The raw material for the manufacture of pellets are bran, soybean meal/cake fish meal and mollases.

Bran is obtained as by product of rice owned by the KUD itself and it is bought from the cooperative member who own a rice miller. The ingredients for making pellets consist of meal soybean meal and mollases which are bought from the market.

Composition of raw material for making pellets:

Raw material	Percentage (%)	Protein content (%)
Bran	65	15
Fish meal	20	60
Soybean meal/cake (deoiled soybean)	15	36
Mollases		-
<b>T o t a l</b>	<b>100%</b>	<b>-</b>

The amount of required raw material and end product

As shown table 5.

The produced pellet will be marketed to the cooperative members who are fish farmers and also to the tambak fish farmers around the project.

#### 4. Pellet Processing.

##### 1. Raw material reception.

The raw material consisting of brans fish meal and soybean meal are stored in the silo.

Each material is weighed according to the composition fixed and then fed into the hopper bin.

##### 2. Grinding and Mixing.

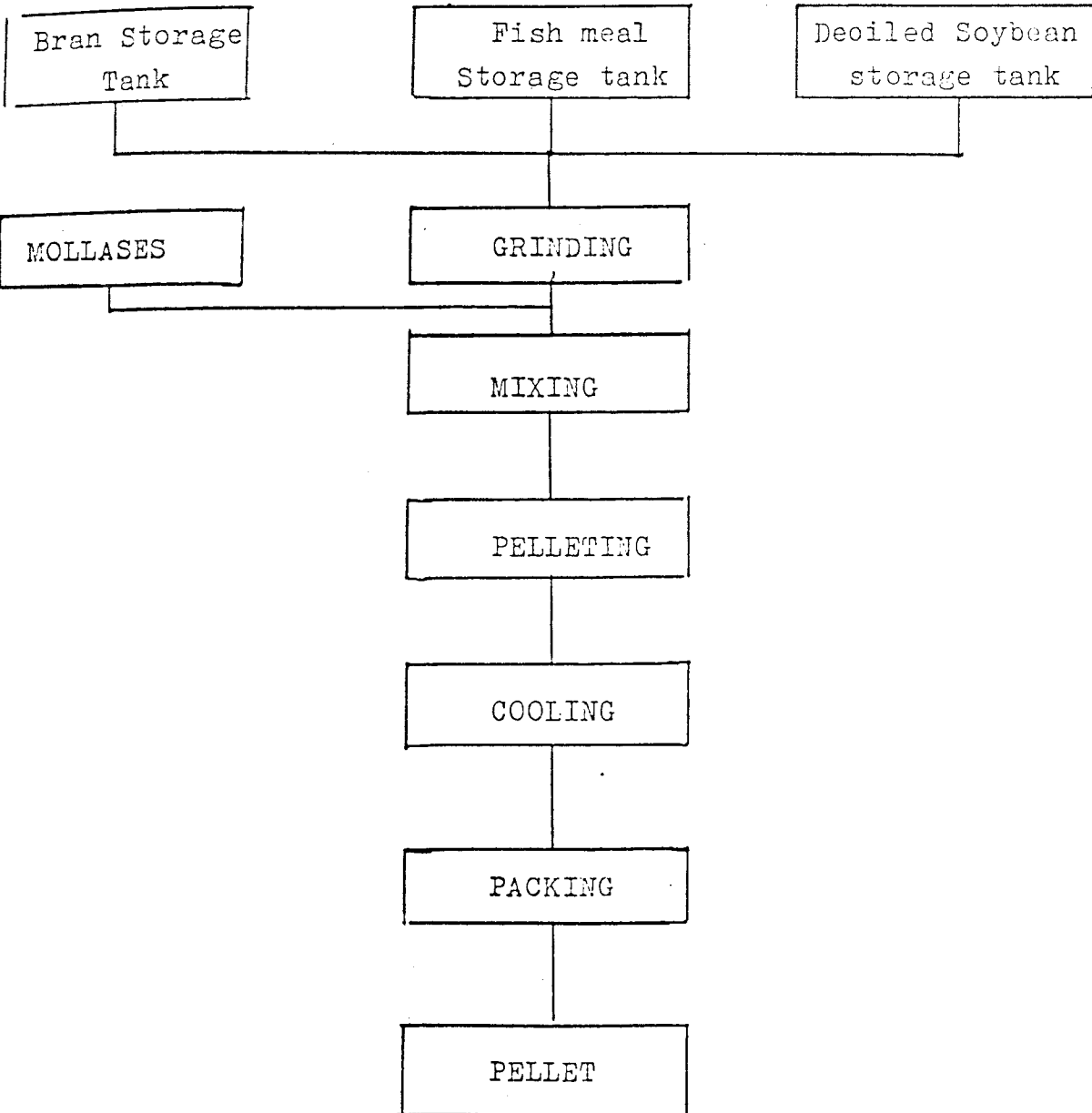
The material that is fed into the hopper bin is ground into fine powder, then filled into a bin where sufficient molasses is added, after which it is stirred until it is well mixed.

##### 3. Pelleting and Cooling.

The well mixed material is fed through an auger into the pelleting machine where the mixture is cut into pellets of 2,4 mm diameter. After that the pellets are cooled in a cooling room swiftly in order to obtain hard pellets.

##### 4. Packing.

The hard pellets are then weighed and filled into polythylene bags of 50 kgs each, ready to be marketed. The process chart for making pellets is as shown in the picture

Flow/chart diagram of Pellet Processing

## Specification of machinery equipment required

Discription	Model	Qty.
- Storage tank	-	4
- Grinding machine	24 SS	1
- Anger 30° slope	Lister	1
- Mixing	Lister	1
- Pellet 2.4 0	Lister	1
- Cooling	Lister	1
- Bucket Elevator		1
- Packaging		1
- Engine Diesel	30 HP	1

The Price (include instalation, training) Rp. 80.000.000,-



## 33.3 Operation of Plant:

## 1. No. of days of operation and rate of operation:

No.	Items	Rice milling	Pelleting Plant
1. Rate of operation:			
	Annual processing capacity	10,740 tons	1,920 tons
	Trial production (80%)	9,266 "	1,706 "
	1st month of test run (75%)	900 "	166 "
	2nd month of test run (80%)	960 "	177 "
	3rd month of test run (85%)	1,020 "	188 "
	4th month of test run (90%)	1,240 "	200 "
2.	Annual number of days operating	240 days	240 days
3.	Working hours per shift	8 hrs	8 hrs
4. Working shift / days			
	Procurement of raw materials	1 shift	1 shift
	Processing	2 shifts	2 shifts
	Marketing	1 shift	1 shift
	Finance	1 shift	1 shift

## 2. Quantity of raw material to be consumed:

The quantity of raw material and subsidiary material to be consumed by plant of rice milling and pelleting are shown in tables 3, 4 and 5.

TABLE 3: RAW MATERIAL & UTILITY CONSUMPTION

ITEMS	UNIT	UNIT PRICE (Rp./Kg)	MONTHLY		YEARLY	
			QUANTITY	AMOUNT (Rp.000)	QUANTITY	AMOUNT (Rp.000)
<u>RAW MATERIAL</u>						
- PADDY	Tons	225	1119	251.775	10.740	2.416.500
- FISHMILL	Tons	500	42	21.000	404	202.080
- DEOILED BEAN	Tons	350	35.5	11.025	303	106.092
- BRAN	Tons	100	137.	13.700	1.314	131.400
- MOLLASSES	Tons	40	10.5	420	101	4.042
<u>SUBSIDIARY MA- TERIAL</u>						
- Packing/gun- nybags	Case	700,-	7,887	5,521	75.710	52.997
- Polythene bag	Case	200,-	4,000	800	38.400	7.680
- Fuel	l	250	8,125	2.032	62,400	15,600
- Diesel Oil*	l	250	10.000	2.500	96.000	240.000
- Oil	l	1.000	200	200	1,600	1.600
- Grease	kg	1.500	24	36	230	345

Note \* : Fuel Consumption for Genset = 25 l/hr.

TABLE 4: PRINCIPAL PRODUCTION OF RICE.

YEARS	NET OPERATING DAYS	CAPACITY MACHINE OPERATION	TONNES PADDY PROCESSED	RICE % PADDY	TONNES RICE PRODUCED	TONNES Small Broken	TONNES BRAN PRODUCED
1	<del>220</del> 240	80%	9216 (9130)	65%	5790 (5.935)	460 (458)	737 (730)
2	240	(90%) 93	10.740	68%	7.303	268	860
3	240	(90%) 93	10.740	68%	7.303	268	860
4	240	(90%) 93	10.740	68%	7.303	268	860
5	240	(90%) 93	10.740	68%	7.303	268	860
6	240	(90%) 93	10.740	68%	7.303	268	860
10.	240	(90%) 93	10.740	68%	7.303	268	860

TABLE 5: PRINCIPAL PELLET PRODUCTION

YEARS	NET OPERATING DAYS	CAPACITY MACHINE OPERATION	TONNES RAW MATERIAL REQUIRED			TONNES PELLET PRODUCED
			BRAN	FISHMILL	DEOIL SOY BEAN	
1	240 (225)	80%	1164 (1077)	358 (332)	268 (248)	1706 (1575)
2	240	90%	1314	404	303	1920
3	240	90%	1314	404	303	1920
4	240	90%	1314	404	303	1920
5	240	90%	1314	404	303	1920
6	240	90%	1314	404	303	1920
10	240	90%	1314	404	303	1920

### 3.4. Procurement and Marketing.

#### 3.4.1. Procurement.

The procurement of paddy from the KUD member farmer is planned to be linked with information and the granting of production facility credit (input supply). The coordination of procurement at the village level will be coordinated by the Farmers Group (Kelompok Tani) in their respective villages.

In every village a supply and service centre (collecting centre) will be established for serving the KUD members.

##### 1. Quantity of Supply.

Based on the projected paddy planting per year the estimated paddy supply for each season in each village can be seen in the table

##### 2. Paddy quality and Price.

The procurement of paddy will emphasize on Harvest Dried Paddy (HDP) with 26% moisture content, this is so arranged to make it easy for the farmers in fixing their sales price. However, Milled Dried Paddy (MDP) is also acceptable.

Difference in quality will also have an influence on the price of the paddy itself.

The price level of the farmer supplied paddy certainly depends on the rice price in the general market.

Prices will be fixed as per following mechanism :

1. The initial price is the price when procuring paddy quality i.e. slightly above the government base price.
2. After being processed the marketed rice obtains an excess value and this is returned to the farmer who supplies the paddy, this is called incentive.

The amount of initial prices for the various paddy qualities are indicated in table 4.1.

### 3.4.2 Marketing:

#### 1. Marketing of Rice:

Marketing of rice is planned to be carried out by cooperative (CUS) itself, by establishing branch offices in the central wholesale rice market in Jakarta. The delivery of rice will be on a continuous basis round the year.

Two types of marketing operation systems are as below:

- i) Marketing in bulk through wholesale markets.
- ii) marketing in small packs of about 5 kg and 10 kg 25 kg per pack. This system will be delivery to the supermarketbased on consignment basis.

According to the monthly fluctuation price of rice in Jakarta the selling price maximum should be Rp 354 per kg for wholesale market and Rp 400 kg for retail price (supermarket),

Small brokers of rice will be selling in the local village market at Rp 200 per kg and brown at Rp 100 per kg.

#### Marketing of Pellets:

Marketing of pellets mainly emphasise for the number of farmers and if possible to be restricted to the Karawang district. The price of pellet should be around Rp 350 per kg by home delivery service or through farmers group in these areas.

#### 4. Organization and Management

As is generally the case with cooperative organization, in carrying out its function to achieve its objective largely depends on three components of the cooperative i.e. Members, Manager and Staff (management people).

The three components must work together in a total cooperative activity management.

The activity of KUD Jatisari at present is member upgrading and business activities consisting of procurement/marketing of food, rice milling unit, input supply, consumer goods, small credit activities especially covered in this project are procurement/supply of food, paddy processing and by product processing, as follows :

##### 4.1. Organizational Structure.

The organization of this project cannot be separated from the existing KUD organization, only in managing this project it is done by the project manager, with organization scheme as per attached sheet.

##### 4.2. Task and Function of the Organization.

###### 4.2.1. Function of the organization.

1. A member is owner of the project and producer of paddy.
2. Board of Directors are representatives of the members in managing the organization of the cooperative.
3. The Executive Body of the project consists of project activities executive team, which functions to carry out routine activities of the project in accordance with the policy fixed by the Directors.

###### 4.2.2. Task of the Organization.

###### 1. Members

- to cultivate the paddy plant within his land.
- to sell the paddy harvest to the cooperative (KUD Jatisari) at reasonable price.
- in carrying out the planting and sales of paddy the members work together and are coordinated by the farmers group (kelompok tani).

- the farmers group represents the members in their village whose task is to function as service centre for the farmer members of the cooperative.

## 2. Board of Directors.

To create the organization's policy connected with the project's objective which covers the policy concerning its members, business, finance as well as personal policies.

## 3. Team Management (Executive Body).

To plan the activities of the cooperative organization with regard to the project's objective covering project implementation scheme, planting preparation, personnel as well as project report system to be proposed to the board of directors. In carrying out this task the project manager is assisted by the organization division with the following task :

### Procurement Division.

The tasks of the procurement division are :

1. To plan the implementation of the procurement system/paddy procurement from the members, thereafter it is discussed with the manager to be further proposed to the directors.
2. To organize paddy procurement activity together with the farmers group (kelompok tani) and its members.
3. To prepare a place/centre for procurement and facilities in every village.
4. To determine a procurement standard comprising quantity, price, quality, packing and operational cost.
5. To determine payment method to the farmer/member for the paddy supplied to the cooperative (KUD).
6. To determine the forwarding of paddy from the fields or collection centres to the processing ware-house.
7. To determine the operational cost for paddy procurement.



8. To give reports to the manager on the implementation of procurement.

Processing Division.

The tasks of the processing division are :

1. To plan the execution of marketing rice and pellet by product to the general market as well as to the government.
2. To determine the salesprice of rice and pellet reasonably in accordance with the production cost incurred.
3. To determine distribution channels and the despatch of products to buyers' place.
4. To develop a sales network through promotion of the product output.
5. To analyze incoming market information concerning rice, pellet as well as other products (competitors' price, packing and other services).
6. To take stock inventory of the product yielded.
7. To make reports to the manager on marketing implementation.

Finance Division.

The tasks of finance division are :

1. To plan financial needs of the project.
2. To arrange financial management of the project.
3. To arrange administration and accounting of the project's finance.
4. To receive and collect money resulting from product sales of the marketing division and arrange payments for the purchase of raw materials.
5. To calculate the costs in connection with the project implementation.
6. To make financial reports of the project for submission to the manager.

## 4.3. Number of personnel required.

The number of personnel required are as follows :

Manager (General Manager)	1.
Assistant Manager	4.2
Staff	22.41
Clerk/Secretary	3.8
Driver	4.5
Unskilled workers	2.26
T o t a l	37.78

Whereas temporary workers number amounting to <sup>26</sup>30 peoples.  
Total personnel cost is as indicated in table 6, G.a. G.b

Figure: 3 THE ORGANISATION STRUCTURE OF THE PROJECT.

Figure 3: ORGANISATION STRUCTURE OF THE PROJECT.

Page 38.

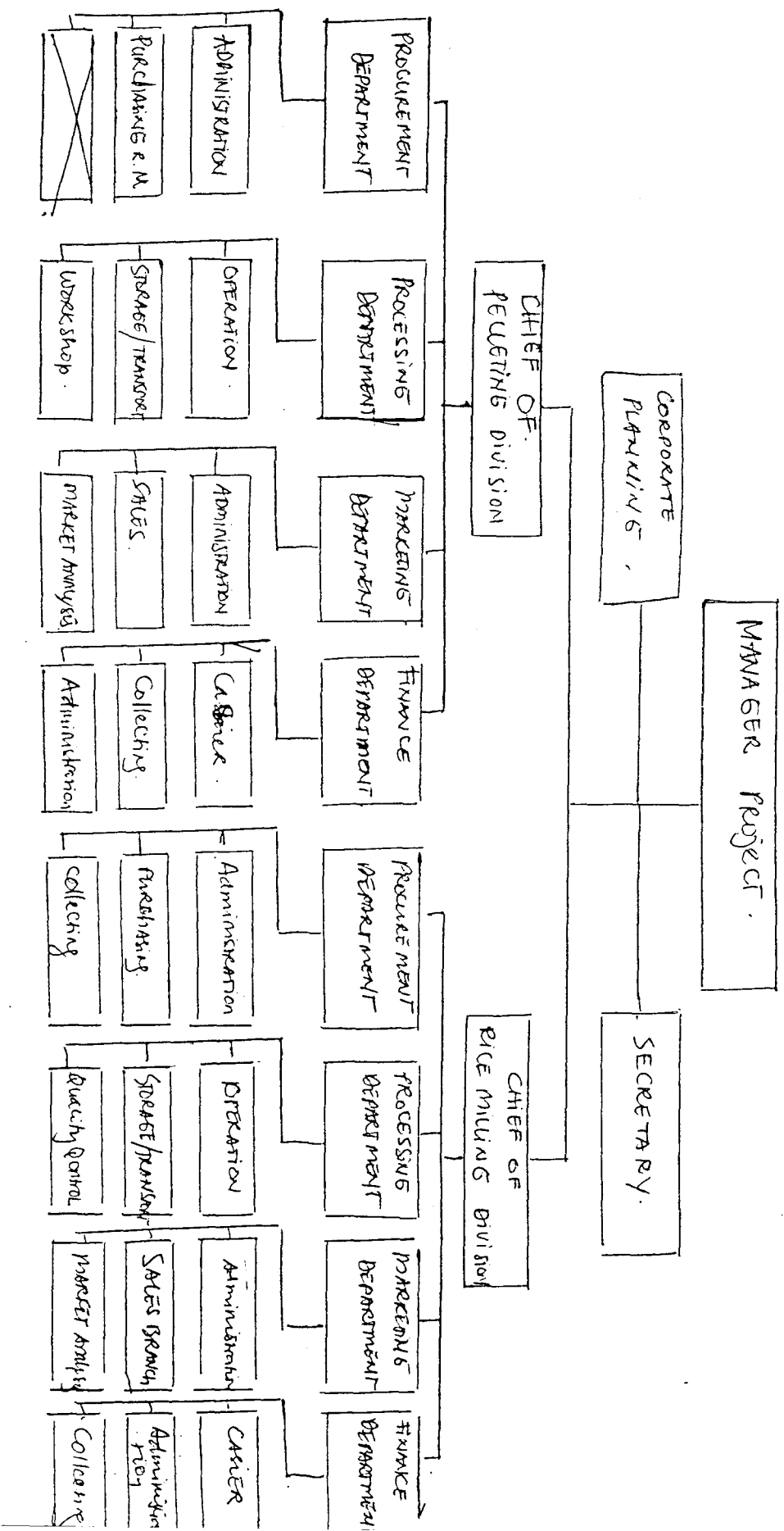


TABLE 6: TOTAL PERSONAL EXPENSES

Kind of Work	Number	Monthly Amount (Rp/person)	Monthly Total (Rp)	Annual Amount (Rp)
<b>I. OFFICE STAFF SALARY</b>				
1. Manager	1	500,000	500,000	6,000,000.
2. Processing Officer	2	250,000	500,000	6,000,000.
3. Finance Officer	1	250,000	250,000	3,000,000.
4. Procurement Officer	1	250,000	250,000	3,000,000.
5. Marketing Officer	1	250,000	250,000	3,000,000.
6. Processing Staff	8	150,000	1,200,000	14,400,000.
7. Finance Staff	3	150,000	450,000	5,400,000.
8. Marketing Staff	3	150,000	450,000	5,400,000.
9. Storage & Transport	3	100,000	300,000	3,600,000.
10. Procurement Staff	4	100,000	400,000	4,800,000.
11. Secretary & Clerk	3	75,000	225,000	2,700,000.
12. Driver	4	75,000	300,000	3,600,000.
13. Watchman	3	75,000	225,000	2,700,000.
14. Bonus	1 month salary			5,300,000.
15. Contingency				11,100,000.
<b>Sub Total</b>	<b>37</b>		<b>6,225,000</b>	<b>80,000,000.</b>
<b>II. WAGES OF FACTORY WORKERS.</b>				
General Workers	28	50,000	1,400,000	11,200,000.
Workshop	2	75,000	150,000	1,800,000.
Bonus	1 month salary	75,000	150,000	1,800,000.
Contingency			375,000	3,600,000.
<b>Sub Total</b>	<b>30</b>		<b>1,925,000</b>	<b>18,150,000</b>
<b>T o t a l</b>	<b>67</b>		<b>8,150,000</b>	<b>98,150,000.</b>

TABLE 7: OTHER OPERATIONAL EXPENSES

I t e m	Amami (Rp.)	Description ( Rp.)
1. Repairing Expenses of machinery & Equipment	4.400.000	Based on experiences about 2% of machinery cost
2. Overhead Cost	11.500.000	-overall gloves, shoes and Soap Rp.1.000.000,- -Vehicle maintenance " 5.400.000,- -Staff travelling " 3.000.000,- -Welfare Expenses " 1.000.000,- -insurance " 650.000,- -Miscellaneous " 450.000,-
3. General Adm. Expenses	10.500.000	- Accountancy, Legal Rp.4.000.000,- - Telegram, Telpon " 1.500.000,- - Travelling Allowance " 1.000.000,- - Gen. Meeting " 3.400.000,- - Maintenance office " 600.000,-
4. Sales Expenses	17.159.000,-	
T O T A L	44,559,000,-	

The calculation of each process shown in table 7.a, 7.b  
(APPENDIX)

## 5. CAPITAL REQUIREI

## 5.1. Basic Conditions.

The project cost estimated on the following basic conditions

- (1) Currency exchange rate as of January 1987.

US \$ 1,00 = Rp. 1600,-

- (2) Procurement contract for machinery and equipment turnky basis contract.

- (3) Time of estimating the cost.

The cost is estimated on the basis of price as of January 1987.

- (5) Periode of construction.

First year of plant construction :

- Building construction and manufacture of machinery
- In the 2<sup>th</sup> month installation of machinery.

Start up of operation.

- Operation will begin after 3<sup>th</sup> month.

Month of full operation.

- The rate of operation will attain 95% in the fourth month operation.

## 5.2. Estimation of Project Cost.

The project cost will be estimated as below on the basis of price as of January 1987.

## 1. Land and Building.

Total of land requirement for drying area, processing, plant. Ware house, office is 2.500 m<sup>2</sup>, estimated

cost of land and construction as under :

- Land : 2,500m2	Rp. 12.500.000,-
- Building construction	
- Office Building 150 m2	Rp. 18.750.000,-
- Processing plant building 150m2	Rp. 15.000.000,-
- Ware house 800 m2	Rp. 64.000.000,-
	<hr/>
Total cost of land building	Rp. 110.250.000,-

## 2. Machinery & equipment.

- The turnkey project cost of rice milling unit and pelleting unit as under.
- Rice milling unit old Rp. 10.000.000,-
- Rice milling unit new Rp. 120.000.000,-
- Pelleting Plant Rp. 80.000.000,-

Table gives details of specification machinery required.

## 3. Office furniture & office equipment, vehicles.

Beside office furniture, they needs 3 truck for transportation of product and raw material the following cost of items above.

- Furniture office equipment	Rp. 14.000.000,-
- Truck 5 mT 3 units	Rp. 45.000.000,-
- Truck 3 mT 1 units	Rp. 12.000.000,-
- Vehicle 1 units	Rp. 8.000.000,-
	<hr/>
	Rp. 65.000.000,-

## 4. Other capital Expenditure.

### (a) Testing and commissioning.

Performance of the machine will be inspected for two months after the installation, the cost.

Will be pay by Manufacturer of machinery.

## (b) Training cost.

There mechanical engineer will be train for two month in the manufacturer of machinery to realise the smooth process control after the testing of machinery and equipment.

Part of cost training will be pay by supplier and amount Rp.1.250.000,- will be put aside.

5.3 . Working Capital.

The calculation of working capital required based on

- Stock raw material and finish product : 15 days
- Collection periode : 7 days
- Personnel expenses : 1 month
- General administration expenses : 1 month

Total working capital required as followed (Rp.000)

- Raw material (included pellet process)			
<sup>15</sup> x Rp. <sup>11.497</sup>	=	Rp.	172,481 , -
- Subsidiary material			
<sup>15</sup> x Rp. <sup>846</sup>	=	Rp.	12,700 , -
- Personnel expenses (1 month)	Rp.	8,368	, -
- General Expenses (1 month)	Rp.	3,099	, -
			<hr/>
Total working capital required	Rp.		197.013

The calculation working capital of each process shown Appendix

## 5.4. Total Project Cost.

Referring to the cost sited above the total project cost is shown as under :



TABLE 2: TOTAL PROJECT COST REQUIRED.

( Unit Rp.1000 )

I t e m	Total	Break down	
		Owner Portion	Credit Portion
1. Machineries			
- New Rice Milling	120.000	-	120.000
- Old Ria Milling	10.000	10.000	-
- Pellet Madrinery	80.000	-	80.000
- Training fee	1.250	1.250	
Sub Total	211.250	11.250	200.000
2. Building Construc- tion & land	110.250	46.250	64.000
3. Truck/Vehicte	65.000	-	65.000
4. Office Equipment	14.000	14.000	-
5. Initial Working Capital	197.053 192.037	-	197.053 <del>192.037</del>
6. Total Financing Required	597.553	71.500	597.553

note: Break down Calculation of each process shown in appendix.

## 6. FINANCIAL ANALYSIS

## 6.1. Pre requisite for financial analysis.

1. The normal operation project will start in the fourth month after finish instalation of machinery & construction of building.
2. Internal Rate of return will be calculated considering that life of the project 10 years.
3. Depreciation.  
Depreciation cost is shown in tabel.

Item	Cost/Project life (Rp. 1000)	Depreciation Rp. 1000).
- Construction	Rp. 97,750/20y	Rp. 4,887,50
- Machinery & Eqt.	Rp.210,000/20y	Rp.21,000,00
- Office eqpt.	Rp. 14,000/ 5y	Rp. 2,800,00
- Truck/vehicle	Rp. 65,000/ 5y	Rp.13,000,00
Total		Rp.41,687,50

## 4. L o a n.

## (a). Long term Loan.

- Payment periode = 3 years after completion of testing machinery &
- Grace periode = 1 year
- Annual interest = 14%
- Repayment method = Every year incequal installments.

Interest  
(in the first year operation) = Rp. 46.060.000,-

## (b) Short term Loan.

Payment periode	= 1 years.
Annual interest	= 18 %
Repayment method	= Every 6 month per year in equal installments.
Interest (in the first year operation).	= Rp.34.567.000,-

## 5. Sales tax &amp; cooperative tax.

- There is not sales tax in the grain or rice business.
- 15 % of the income of coop a year is put aside for cooperative tax.

## 6. Production Cost.

The production cost of the plant at the time of full operation ( 90 % ) will be as Table.

Table 9

I t e m	Amount (Rp.)
1. Raw material	
- paddy	2,416,500
- Fish mill	202,080
- Deoil Saybean	106,092
- Mollases	4,042
- Bran	400
	131
2. Auxilary material	132,222
3. Personnel Expenses/workers	15,960
4. Repairing Expense	4,400
5. Depreciation Expense	41,687,50
6. Interest 14 %	46,060
18 %	34,469
7. Other/Overhead	11,500
<hr/>	
Annual production Cost	
	102,375
8. General Administrative Expense	
9. Sales Expenses	17,159
10. Sales tax & stampduty	-
<hr/>	
Annual Sales Cost	
	3,236,886

## 7. Raising of Capital.

### (1) Raising Method of Capital.

The total project cost will be covered by long term loan, short term loan and equ equity capital.

#### (a). Long term loan.

Long term loan are needed to purchase of machinery and construction / building cost.

Total project cost (investmen cost) required Rp. 329.000.000,- will be concened by credit long term, interest rate 14 % / year during 5 years repayment after 1 year operation.

#### (b). Short term loan.

Short loan during 3 years to purchase of raw material and inventory stock.

The total short term loan as working capital Rp. 192.037.000,- will be covered goverment Bank.

#### (c). Equity Capital.

12 % of total investment will be covered by equity of KUD, aspecially for purchase land part of Building and ware house.

6.3. Net Profit Ratio and Profit Ratio of Capital (Rp. 1000,-).  
( 2<sup>nd</sup> year after start up ).

Annual sales revenue	Rp.	3.306.862,--
Annual sales cost	Rp.	<u>3.236.886,50</u>
Profit Before tax	Rp.	159.976,50

1. Net profit ratio before tax.

$$\frac{\text{Profit before tax}}{\text{Total sales revenue}} = \frac{\text{Rp. } 159.976,50}{\text{Rp. } 3.306.862} = 4,7\%$$

2. Profit ratio of capital.

$$\frac{\text{Profit before tax}}{\text{Total capital}} = \frac{\text{Rp. } 159.976,50}{\text{Rp. } 592.537} = 26,77\%$$

on the basis of the profit estimated above. The initial invested capital (Rp. 592.537.000) will be recovered in above ~~4~~<sup>3,7</sup> years.

The profitable of the project is reasonable and will be increase when the rate of the operation is expected to attain 100%.

## 6.4. BREAK EVEN POINT

The Break even point will be analysed on the basis of the production cost in the 2<sup>nd</sup> year after Start up when the rate of operation is expected to attain 95 %. As was stated below the profit in the normal operation is reasonable so the break even point is, under:

I t e m	Amount ( Rp.1.000 )
Sales revenue	3,396,862.
Variable cost	3,081,324
Fixed cost	113,875
Depreciation	41,688
Total cost	3,236,886
Net Profit	159,976
Break even Point	59,1 %      49,3.

$$\begin{aligned}
 \text{B.E.P.} & : \frac{\text{Fixed lost + Depreciation}}{\text{Sales - variable Cost}} \\
 & \frac{143.688}{241,102.50} \times 100 \% = 59,1 \%
 \end{aligned}$$

## 6.5. INTERNAL RATE OF RETURN

On the basic of the conditions cited so far, the internal rate of return after tax will be calculated.

According tabel, the internal rate of return will become :  $IRROI = 28,17\%$  when the project life as 10 years, it is means higher then Bank interest.

In the present project, if the maintenance and inspection of machinery and equipment are performed regularly, the project life will extend to more then 10 years is 15 years, so  $IRROI$  will be increase.

## 7. CONCLUSION AND RECOMENDATION.

7. 1. As was mentioned early that the Potensial area of the Project is paddy cultivated with total production 24,667 m Tons a year.

The farmers involve in the paddy production about 2.492 house hold.

The farmers will sell their paddy without processing as soon after finished harvest, there are not any processing by product of the paddy, so generating additional income of the farmers still low.

7. 2. Further increasing the role of cooperative in the paddy production scheme should be develop as integrated paddy processing and marketing Project.

The Project consist of set up of Paddy Processing unit and by product process in to pellet and development rice of marketing.

According the Analysis of project the total cost of project Rp. 529.537.000,- with profitability 23,47 % internal rate of return 28,17 % and pay back periode 4,5 year.

7. 3. The Project expected increase income of the member farmers about 18 - 20 % with better purchase price of the paddy by KUD to the member farmers.

7. 4. The success of the present project will encourage other farmers group become members to the cooperative and also other KUD to set up integrated processing plant.

7. 5. In this way, the present project will not only contribute income of the member farmers but also will



give opportunity to the local employees in there area and another social benefit.

Thus, we firmly believe that project is feasible and so important that it should be excented urgently.

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1717-00.

PETA PROVINSI JAWA BARAT

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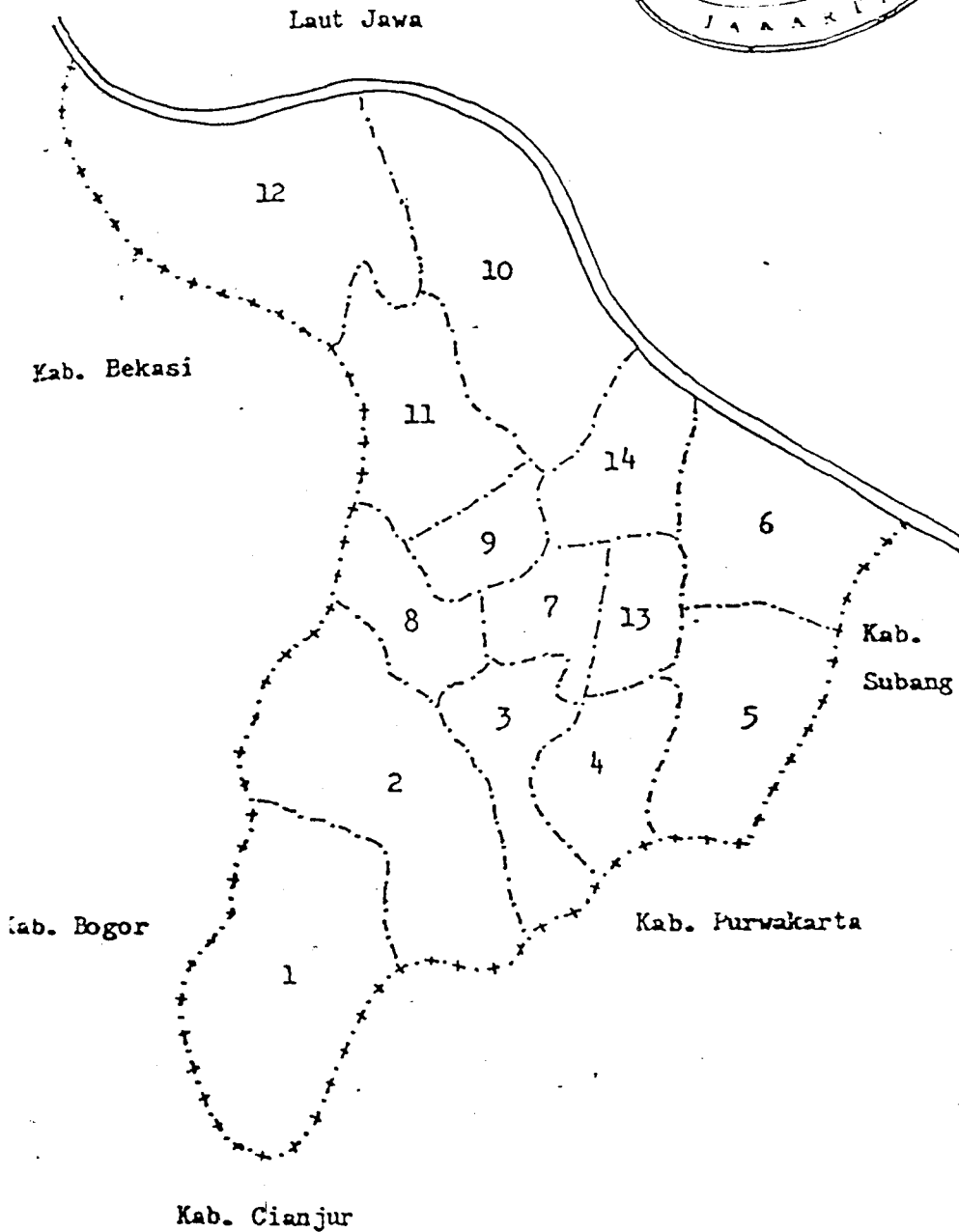
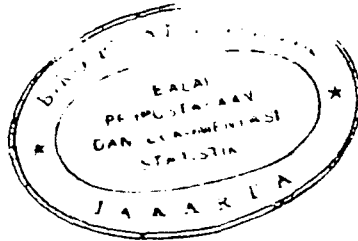


KETERANGAN :

----- : Batas Propinsi

- - - - - : Batas Kabupaten/Kotamadia

● : Ibu Kota Kabupaten/Kotamadia



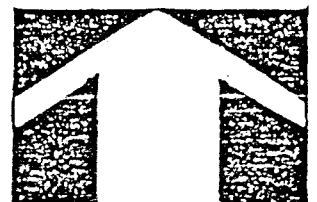
K E T E R A N G A N :

1. KEC. PANGKALAN
2. KEC. TELUKJAMBE
3. KEC. K L A R I
4. KEC. CIKAMPEK
5. KEC. JATISARI
6. KEC. CILAMAYA
7. KEC. TELAGASARI
8. KEC. KARAWANG
9. KEC. RAWAMERTA
10. KEC. P E D E S
11. KEC. RS. DENGKLOK
12. KEC. BATUJAYA
13. KEC. LEMAHABANG
14. KEC. TEMPURAN

+++++BATAS KABUPATEN

-----BATAS KECAMATAN

KABUPATEN KARAWANG



1 : 525. 000.

TABLE 2. AVERAGE NUMBER OF RAINDAYS AND RAINFALLS  
AT THE JATIHARI KUD (1981-1985)

YEAR	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUGST		SEPT		OCT		NOV		DESC		TOTAL		AVERAGE	
	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm	Days	mm
1981	27	652	13	252	12	138	8	75	0	0	3	54	6	100	0	0	4	69	4	130	13	312	8	123	98	1905	8	159
1982	14	184	14	106	8	113	10	85	10	167	0	0	6	13	0	0	0	0	7	246	5	83	8	162	82	1239	7	103
1983	15	180	12	179	7	115	12	97	12	160	2	30	1	10	0	0	1	12	5	239	4	70	5	160	75	1242	6	103
1984	12	246	12	190	10	278	19	444	4	90	3	35	0	0	3	16	6	67	9	98	9	105	14	65	101	1634	8	136
1985	15	231	11	135	13	173	11	209	3	43	5	58	8	190	1	3	0	0	6	122	4	55	15	237	92	1956	7	121
Average	16	298	12	188	10	163	10	180	6	92	2	35	4	62	1	4	2	30	6	167	7	125	10	149	89		7	124

Tabel 2. Estimates area Production, Marketables Surplus  
and share procurement

Years	Area under cultivation (Ha)	Annual Produc tion ( M.T. )	Paddy for consumption (M.T)	Marketable Surplus (M.T)	Procurement by KKP	
					(MT)	%
1985	1.999	24.667	6.167	18.500	10 70.716	38
1987	1.999	24.667	6.167	18.500	11.000	60
1988	1.999	24.607	6.167	18.500	12.950	70
1999	1.999	24.067	6.167	18.500	12.950	70
1990	1.999	24.667	6.167	28.500	12.950	70
1991	1.999	24.667	6.167	18.500	12.950	70
1997	1.999	24.667	6.167	18.500	12.950	70

MONTHLY FLUCTUATION PRICE OF RICE AT  
JAKARTA 1982 - 1986

YEAR	M O N T H												AVERA GE PRICE Rp.	FLOOR PRICE Rp.
	JAN	PEB	MAR	APR	MEI	JUNE	JULY	AUGUST	SEPT	OCT	NOP	DES		
1982	228.2	234.4	232.5	230.4	230.4	230.4	230.4	230.4	232.0	232.4	242.5	253.6	235	214
1983	270.7	286.6	261.7	259.0	285.8	285.8	285.8	285.8	286.4	288.4	292.0	309.2	281	238
1984	321.3	322.2	318.8	302.8	302.8	302.8	302.8	302.8	302.8	303.8	302.8	316.9	309	270
1985	315.7	313.8	308.1	307.0	304.6	293.2	292.1	302.7	306.4	313.4	329.7	338.3	310	285
1986	351.8	375.5	329.9	289.6	289.3	289.3	292.6	300.6	309.4	357.8	365.1	365.0	326	285
Rata <sup>2</sup>	297.5	302.9	290.2	277.7	282.6	280.3	280.7	284.6	288	299.0	306.4	316.6	292.2	258.4
Deffe rent BU LOG PRI CE	15.1	17.2	12.3	7.5	9.3	8.5	8.6	10.1	11.4	15.7	18.6	22.5	13.0	-
Price of Rice(Rp)	360	367	351	336	342	340	340	344	348	362	371	383	354	313

Estimate Population and Rice Consumption  
In Jakarta 1985-1990

---

Years	Population * (000)	Rice Consumption (Tons) **
1985	7,781	1.067,786
1986	8.086	1.109.641
1987	8.404	1.153,281
1988	8.734	1.198.567
1989	9.077	1.245.636
1990	9.434	1.294.628

Notes : \* Growth of population 3,39

\*\* Rice Consumption/person/year = 137,23 kg

Sources : Bulog 1985

Tabel 4.1 FLOOR PRICE OF PADDY FROM THE FARMERS AT THE KUD

Quality	Procentage			
	PHD	PVD	PSD	PMD *
- Max Moisture Concrit	26	19	16	14
- Max Foreign matter	10	8	6	3
- Max Chalky Kernels	15	10	9	5
- Max Yellow and damage kernels	3	3	3	3
- Max Red Rice	3	3	3	3
Purchase Price	125	145	165	190

- \*)
- PHD = Paddy Harvest Dry.
  - PVD = Paddy Villages Dry.
  - PSD = Paddy Storage Dry.
  - PMD = Paddy Milling Dry.



Tabel : 4.2 AVERAGE PRICE OF PADDY AND RICE/KG  
AT THE AREA PROJECT

(Rp)

ITEM OF PRICE	PRICE / KG					
	1981	1982	1983	1984	1985	1986
Floor Price of Paddy *	120	135	145	165	175	175
Floor Price of Rice *	195	214	238	270	285	285
Price of Paddy at the Miller	133	153	170	181	190	192
Price of Rice at the Miller	203	229	259	279	285	287
Price of Rice at Jakarta	217	234	281	309	310	327
Price of Rice at Bandung	211	229	270	283	259	324
Average Price of Rice Indonesia	226	255	304	331	322	395

Source : BULOG.

Note : \*The Price decided by Instruction Presiden of Republic Indonesia

\* The Price above are medium Quality of rice.



PROFIT PROJECTION AND CASH FLOW STATEMENT.

Description	Year									
	1	2	3	4	5	6	7	8	9	10
1 Loan Medium Term	3,29,000.	-	-	-	-	-	-	-	-	-
Short Term	1,97,053.	-	-	-	-	-	-	-	-	-
Egging	71,500.	2,585,262.	2,585,262.	2,585,262.	2,585,262.	2,585,262.	2,585,262.	2,585,262.	2,585,262.	2,585,262.
Sales - R.C.	2,120,460	53,600.	53,600.	53,600.	53,600	53,600.	53,600	53,600	53,600	53,600.
- Small broken	927,000.	86,000.	86,000.	86,000	86,000	86,000	86,000	86,000	86,000	86,000
- Prem	737,900	672,000.	672,000.	672,000	672,000	672,000	672,000	672,000	672,000	672,000
- Rellor	597,100	672,000.	672,000.	672,000	672,000	672,000	672,000	672,000	672,000	672,000
CASH INFLOW	3,480,813.	3,396,862.	3,396,862.	3,396,862.	3,396,862.	3,396,862.	3,396,862.	3,396,862.	3,396,862.	3,396,862.
2 Project Cost	12,500.	-	-	-	-	-	-	-	-	-
- Land	97,750	-	-	-	-	-	-	-	-	-
- Building	210,000	-	-	-	-	-	-	-	-	-
- Machinery	65,000	-	-	-	-	-	-	-	-	-
- Truck	14,000	-	-	-	-	-	-	-	-	-
- Furniture	1,250	-	-	-	-	-	-	-	-	-
- Turbidity fee	2,500.	5,000.	5,000.	5,000.	5,000.	5,000.	5,000.	5,000.	5,000.	5,000.
Cash Operating Expenses	2,467,184	2,860,114	2,860,114	2,860,114	2,860,114	2,860,114	2,860,114	2,860,114	2,860,114	2,860,114
- Raw material	95,426	102,222.	102,222.	102,222.	102,222.	102,222.	102,222.	102,222.	102,222.	102,222.
- Subsidiary material	15,900	15,900.	15,900.	15,900	15,900	15,900	15,900	15,900	15,900	15,900
- Repairal Expenses (wage)	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400
- Repair & maintenance	113,875	113,875	113,875	113,875	113,875	113,875	113,875	113,875	113,875	113,875
- General Admin Expanding and overhead Expenses	17,159.	17,159.	17,159.	17,159.	17,159.	17,159.	17,159.	17,159.	17,159.	17,159.
INTEREST	46,060	46,060.	33,040.	-	-	-	-	-	-	-
- M.T.L.	35,469	-	-	-	-	-	-	-	-	-
- S.T.L.	10,600	-	-	-	-	-	-	-	-	-
DEPRECIATION	41,687	41,687.	41,687.	41,687	41,687	41,687.	41,687.	41,687.	41,687.	41,687
CASH out FLOW	3,237,660.	3,208,911.	3,193,397	3,160,357	3,160,357	3,160,357	3,160,357	3,160,357	3,160,357	3,160,357
PROFIT BEFORE TAX	243,153.	198,946	208,465.	236,505	236,505	157,595	236,505	236,505	236,505	236,505
COOP TAX	-	28,316.	31,270	35,475	35,475	23,625	35,475	35,475	35,475	35,475
PROFIT AFTER TAX	243,153	168,629	172,195	201,030.	201,030	133,880	201,030	201,030	201,030	201,030
DEPRECIATION	41,687.	41,687.	41,687	41,687	41,687.	41,687	41,687.	41,687.	41,687.	41,687
REPAYMENT	-	164,500.	164,500	-	-	-	-	-	-	-
M.T.L.	-	-	-	-	-	-	-	-	-	-
S.T.L.	197,053	-	-	-	-	-	-	-	-	-
Egging	-	-	71,500.	-	-	-	-	-	-	-
Cumulative Profit	87,389	40,816	(22,118)	242,717	242,717	175,567	242,717	242,717	242,717	242,717
Net Cash Flow	87,389	87,316	188,132	106,019	340,731	591,448	767,05	1,009,832.	1,252,599	1,495,266

TABLE : Discount Cash Flow

	NET IN FLOW	D/R 28%	NET PRESENT VALUE	D/R 32%	NET PRESENT VALUE
(1)	- 592.537	.7813	- 462.949	.7353	- 435.692.
1	13.716	.6104	8,372	.5739	7,871
2	238.824	.4768	113.879	.4348	103.840
3	135,713	.3725	.86.644	.3294	.77,644
4	132.603	.2910	.67.887	.2495	.58.034
5	231.221	.2274	.52.579	.1890.	.43,701
6	161.308	.1776	.40.574	.1432.	.23,099
7	228.458	.1388	.28.648	.1085.	.24.787
8	228.458	.1084	.31.710	.0822.	.18.779
9	228.458	.0847	.24,764	.0623	.14.233
10	228.458	.0662	.19,350	.0472	.10.783
			+ 11.250		- 52.921

$$\begin{aligned} \text{IRROI ( AFTER TAX )} &= 28\% + 1\% \times \frac{11.250}{(11.250 + 52.921)} \\ &= 28,17\%. \end{aligned}$$

Table : The Calculation of Paddy Cultivation and  
Income of the farmers / Ha

---

1. Sales of Paddy

6,100 Kg @ Rp 150,- Rp 915,000,-

2. Cost of production

- Land preparing Rp 56,000,-

- Seed 30 Kg @ Rp350,- Rp 10,500,-

- Planting Rp 70,000,-

- Fertilizer 350 Kg @ Rp120,- Rp 42,000,-

- Pesticide 2 l @ Rp3000,- Rp 6,000,-

- Cultivation Rp 22,500,-

- Harvesting Rp 87,680,-

Sub total Rp 294,680,-

3. Income of the farmers /Ha

Rp 620,320,-

## Appendix I

## 1. Drying:

To obtain good quality rice, paddy must be dried as soon as harvest was over until the moisture content is reduced to 14%.

There are two methods of drying prevalent in Indonesia: sun drying and mechanical drying. Sun drying system means that paddy will be drying directly in the open area with sunshine by using cement or tikar as floor. Drying period is approximately three days from 24% moisture content to reach 14%. This system depends on the duration of the sunshine in a year and will be affecting the produce of rice, 10% of small broken and 25% large broken rice. Whereas with mechanical drying, the temperature of drying, the temperature of drying could be controlled and the average drying temperature could be controlled upto 40- 45° celsius constantly. This system will ~~have~~ produce good quality rice with less percentage of broken rice, say upto 5%. The duration of drying is also about 24 hours only. The cost of drying paddy under this system is ~~not~~ higher than the sundrying system.

The cost for drying paddy under sundrying system is Rp 4 per kg and under mechanical system Rp 15 per kg.

The difference between the two systems are as follows:

	sun drying	mechanical drying
1. Duration	3 days	1 day
2. temperature of drying	uncontrollable	controllable
3. drying cost /kg	Rp 4	Rp 15
4. quality of paddy	high broken rice Low head rice	Low broken rice High head rice
5. Selling price of paddy	rp 190	Rp 190

From the farmers angle, sundrying is more economical and profitable than mechanical drying. To cope with the uncertain

Table : The Calculation of Paddy Cultivation and  
Income of the farmers / Ha

---

1. Sales of Paddy		
6,100 Kg	@ Rp 150,-	Rp 915,000,-
2. Cost of production		
- Land preparing		Rp 56,000,-
- Seed	30 Kg @ Rp350,-	Rp 10,500,-
- Planting		Rp 70,000,-
- Fertilizer	350 Kg @ Rp120,-	Rp 42,000,-
- Pesticide	2 l @ Rp3000,-	Rp 6,000,-
- Cultivation		Rp 22,500,-
- Harvesting		Rp 87,680,-
Sub total		Rp 294,680,-
3. Income of the farmers /Ha		Rp 620,320,-

## Appendix I

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The cost for drying paddy under sundrying system is Rp 4 per kg and under mechanical system Rp 15 per kg.

The difference between the two systems are as follows:

	sun drying	mechanical drying
1. Duration	3 days	1 day
2. temperature of drying	uncontrollable	controllable
3. drying cost /kg	Rp 4	Rp 15
4. quality of paddy	high broken rice Low head rice	Low broken rice High head rice
5. Selling price of paddy	rp 190	Rp 190

From the farmers angle, sundrying is more economical and profitable than mechanical drying. To cope with the uncertain



weather conditions, the cooperative has been provided with a mechanical dryer with a capacity of 25 m tons a day.

Appendix 2 Calculation cost of processing both rice milling and pellets

Table 3.a. Raw material and Electricity Consumption of Rice Milling Unit

Item	Unit	Unit Price	Monthly		Yearly	
			Quantity	Amount	Quantity	Amount
Raw Material:			tons	Rps	tons	Rps
Paddy	Tons	225	1119	251,775	10,740	2,416,500
Subsidiaries:						
Gunny bags	case	700	7887	5,521	75,710	52,997
Fuel	liter	250	8125	2,032	62,400	15,600
Diesel oil	"	2500	7500	1,875	72,000	18,000
Oil	"	1000	150	150	1200	1,200
Grease	KG	1500	24	36	230	345
				261,389	2,504,692	

Table 3.b Raw material and utility consumption of Pelleting Plant

ITEMS	Unit	Price	Monthly		Yearly	
			Quantity	Amount	Quantity	Amount
Raw materials:						
Bran	tons	100	137	13700	1314	131400
Fish meal	tons	500	42	21000	404	202080
deoiled bran	tons	350	35.5	11025	303	106092
Mollases	tons	40	10.5	420	101	4042
Subsidiary Material:						
Polythene bag	case	200	4000	800	38400	7680
Diesel oil	liter	250	2500	625	24000	6000
Oil	liter	1000	50	50	400	400
				47600	457694	

Table 6.a: Total Personal Expenses  
Rice milling units.

NO.	KIND OF WORK.	NU.	MONTHLY AMOUNT	MONTHLY TOTAL	ANNUAL AMOUNT
			(Rp/PERSON).	Rp.	Rp.
1	Chief of Rice Mill Division	1	300,000	300,000	3,600,000
2	Procurement Dept	1	200,000	200,000	2,400,000
3	Processing Dept	1	200,000	200,000	2,400,000
4	Marketing Dept	1	200,000	200,000	2,400,000
5	Finance Dept	1	200,000	200,000	2,400,000
6	Procurement Staff	3	150,000	450,000	5,400,000
7	Processing Staff	3	150,000	450,000	5,400,000
8	Marketing Staff	3	150,000	450,000	5,400,000
9	Finance Staff	2	150,000	300,000	3,600,000
10	Storage/Transport	2	100,000	200,000	2,400,000
11	Secretary	1	100,000	100,000	1,200,000
12	Driver	4	75,000	300,000	3,600,000
13	General worker	15	62,500	937,500	9,000,000
14	Workshops	2	75,000	150,000	1,800,000
15	Bonus	1 month salary			3,350,000
16	Contingency	-			6,900,000
17					
18	Total	48	-	5,156,250	61,250,000
19					
20					
21					

Table 6 b = Total personal Expenses  
Pelleting Plant.

No. ....

	KIND OF WORKS	NO	Monthly Amount Rp/person	monthly TOTAL (Rp)	ANNUAL TOTAL (Rp)
1	Chief of Pellet Plan Divis	1	300,000.	300,000.	3,600,000,-
2	Procurement Dep OFF	1	175,000.	175,000.	2,100,000,-
3	Processing Dep OFF	1	175,000.	175,000.	2,100,000,-
4	Marketing Dept OFF	1	125,000.	125,000.	1,500,000,-
5	Finance Dept OFF	1	175,000.	175,000.	2,100,000,-
6	Procurement STAFF	2	150,000.	300,000.	3,600,000,-
7	Processing STAFF	2	150,000.	300,000.	3,600,000,-
8	Marketing STAFF	1	180,000.	180,000.	2,160,000,-
9	Finance STAFF	2	150,000.	300,000.	3,600,000,-
10	Storage / transport	1	150,000.	150,000.	1,800,000,-
11	Driver	1	75,000.	75,000.	900,000.
12	General worker	8	62,500.	500,000.	6,000,000.
13	Workshop	1	75,000.	75,000.	900,000.
	Bonus	1 month	Salary		2,125,000.
	Contingency			406,250.	4,875,000.-
	<b>Total</b>	<b>28</b>	<b>-</b>	<b>3,106,250</b>	<b>36,925,000</b>

### 5.3 Working Capital Requirements:

#### 5.3.1 Rice Milling Unit:

The calculation of working capital required is based on:

Stock raw material of paddy for	8 days
Stock finished product (rice) for	7 days
Collection period	7 days
Personal expenses	1 month
general expenses	1 month.

Unit:

The total working capital required is as follows: Rp 1000

Raw material and finished product Rp 5 x 44.75 x Rp 225	Rp 151,031.25
Subsidiary materials 15 x Rp 368,258	5,523.87
Personal expenses 1 month	5,156.25
General expenses	2,564.35
Total	<u>164,276.12</u>

#### 5.3.2 Pelleting Plant:

The calculation of working capital required:

stock raw material	8 days
stock finished product	7 days
personnel expenses	1 month
general administration expenses	1 month.

The total working capital required is as follows (unit Rp 1000)

stock raw material and subsidiary material 15 x 1907.05	Rp 20,695.87
personnel expenses	3,106.25
general administration	2,065.16
Total	<u>32,777.28</u>

Table 7.A Other Operational Expenses (Rice Milling Plant)

<u>Item</u>	<u>Amount</u> Rps.	<u>Description</u>
1. Repairing and maintenance of machinery	2,930,000	2% of machinery cost.
2. Over head cost	7,665,000	includes staff training, insurance, welfare, and overall gloves, shoes, soaps etc.
3. general admn expenses	6,993,000	Telephones, general meetings, accounts, legal, maintenance of office etc.
4. Sales expenses	13,188,000	promotion etc. (05% of sales)
Total	30,777,000	

Table 7.B OTHER OPERATIONAL EXPENSES (Pelleting Unit)

<u>Item</u>	<u>Amount</u>	<u>Description</u>
1. Repairing and maintenance of machinery	1,470,000	2% of machinery cost
2. Overhead cost	3,834,000	included staff travelling, insurance, welfare etc.
3. General admn costs	3,507,000	telephone, general meeting maintenance office etc.
4. Sales expenses	3,971,000	
Total	12,782,000	

Table 8A. TOTAL PROJECT COST REQUIRED FOR RICE MILLING

Items	Total (Rp 1000)	Break down (Rp 1000)	
		Owner portion	credit portion
1. Land, Building	64,000	-	64,000
Land	(7,500)	(7,500)	-
2. Machinery			
new rice mill	120,000	-	120,000
old rice mill	10,000	10,000	-
3. Office equip- ment	8,400	8,400	-
4. truck	45,000	-	45,000
5. initial working capital	166,117	-	164,976
6. <del>xx</del> training	1,250	1,250	-
	412,926	19,650	393,276

TABLE 8.B : Total Project cost required of Pelleting Plant:

Items	Total (Rp 000)	break down (Rp 000)	
		Owner portion	credit portion
1. Land, build. Land	46,250	46,250 (5,000)	-
2. Machinery	80,000	-	80,000
3. office equip- ments	5,600	5,600	-
4. truck	20,000	-	20,000
5. initial work- ing capital	42,319	-	32,877
Total	184,627	51,850	132,777



## 1.5 Profit ratio: (on second year operations)

annual sales revenue (Rp 000)		Rp
rice 7,303 x Rp 354		2,585,262
small broken rice - 268 x 200		53,600
bran 860 x 100		<u>86,000</u>
Total sales		2,724,862
annual sales cost		<u>2,684,803</u>
Profit before tax		40,059
Net profit before tax of sales		1.46%
net profit before tax of capital		9.6%

## 1.6 Return on investment 10 years

## 1.7 break even point:

fixed cost + depreciation		<u>91,914</u>
sales - variable cost	:	2,724,862 - 2,592,889 =
		69.6%

## 1.8 Internal rate of return.

## 2. Pellets:

2.1 Depreciation / year:		Rps
building	1 year	2,062,500
machinery	10 years	8,000,000
truck	5 years	4,000,000
office equipments	5 years	<u>1,120,000</u>
Total		Rps. 15,182,500

## 2.2 Loans:

Amount	Medium term	short term
	100,000,000	32,777,280
grace period	-	-
payment period	-	-
repayment method	every year in equal instalments	
interest rate	14%	18%

## 2.3 Sales and cooperative tax:

only coop tax at 15% of income annually is leviabale.



## 2.4. Production Cost.

Based on 90% rate Capacity plant.

1.	Purchase Raw material	Pp	443,614.
2.	Subsidary Cost	Pp	14,080.
3.	Personal Exp.	Pp	36,925.
4.	Repair & maintenance.	Sp	1,470.
5.	Depreciation.	Pp	15,182.50.
6.	Interest rate		
	M. I. L. 14%	Pp	14,000.00.
	S T L 18%	Pp	5,899.91.
7.	Overhead	Pp	3,834.
8.	General Admin Expens	Pp	3,507.
9.	Sales Expenditure	Pp	3,971.
10.	Sales Tax.		-
	TOTAL cost.	Pp	542,483.41.
	Annual Production		
	Cost Production / kg peller.	Pp	282.54.

## 2.5. Profit Ratio.

(2<sup>nd</sup> year after start up).

Annual Sales Revenue. (Rp000).

$$(1920 \times \text{Rp } 350) = \text{Rp. } 672,000.$$

$$- \text{Annual Sales Cost} = \text{Rp } 542,483.41.$$

$$\text{Profit before tax} \quad \text{Rp } 129,516.59.$$

$$\text{Net Profit ratio before tax of Sales} = 19.27\%$$

$$\text{Net Profit ratio before tax of Capital} = 70.15\%.$$

$$2.6. \text{ Return on investment} = 1.4 \text{ year.}$$

## 2.7. Break even point

$$= \frac{\text{Fixed Cost} + \text{Depreciation}}{\text{Sales} - \text{Variable Cost.}}$$

$$= \frac{54048}{672,000 - 480,435.41}$$

$$= 29.4\%$$

## 2.8. Internal Rate of Return

## 6.3. Net Profit Ratio

(2<sup>nd</sup> year after start up). (Rp.000).

## 1. Annual Sales Revenue.

- Rice Rp 2,724,862.

- Pellet Rp 572,000,-

Subtotal. Rp 3,396,862.

## 2. Annual Sales Cost

- Rice Rp 2,684,803

- Pellet Rp 542,483

- Management (Other) Rp 9,600

Sub Total Rp 3,236,886.

3. Profit Before Corp Tax Rp 159,976.

4. Net Profit Ratio of Sales 4.7%

5. Net Profit Ratio of Capital 26.77%

6.4. Return on Investment 3.73 Years,

## 6.5. BREAK EVEN POINT

Item	Amount (Rp000)		
	Rice Milling.	Pelleting Plant	Combination.
Sales Revenue (Rp).	2,724,862	672,000	3,396,862.
Variable Cost	2,592,889	448,435.	3,081,324.
Fixed Cost	65,409	38,866	113,875.
Depreciation	26,505	15,182	41,687.
Total Cost. (Rp).	2,684,803.	542,483	3,236,886.
Net Profit. (Rp).	40,059.	129,517	159,976
Break even point (%)	69.6.	29.4	49.3

$$\text{Break even point} = \frac{\text{Fixed Cost} + \text{Depreciation}}{\text{Sales Revenue} - \text{Variable Cost}}$$

F. Production Cost.

The production cost of both plant rice milling unit and pelleting plant at the Mine of full operation (90% capacity of machine.) will be as table 9.

Item	Amount (Rp 000).		
	Rice <del>Mill</del>	Pellets	Total
Raw material	2,416,500.	442,614.	2,860,114.
Subsidiary material	88,342.	14,080	102,222
Personal Exp/worker	10,500.	5,400.	15,900.
Repair & maintenance	2,930	1,470.	4,400
Depreciation Exp.	26,505	15,182.	41,687
Interest 14%	32,060	14,000	46,060
18%	29,569.	5,900.	35,469
Over head	7,666.	3,834	11,500
General Administration & Salary Expenses.	57,743.	35,032.	92,775
Sales Expenses	13,188	3,971.	17,159
Annual production cost	2,624,803.	542,483	3,226,886.
Annual production (Ct)	7,697	1920.	-
Cost production <sup>1</sup> /Ton	348.811.	282.543.	-

Note: (\*) Salary of General Manager & Staff.

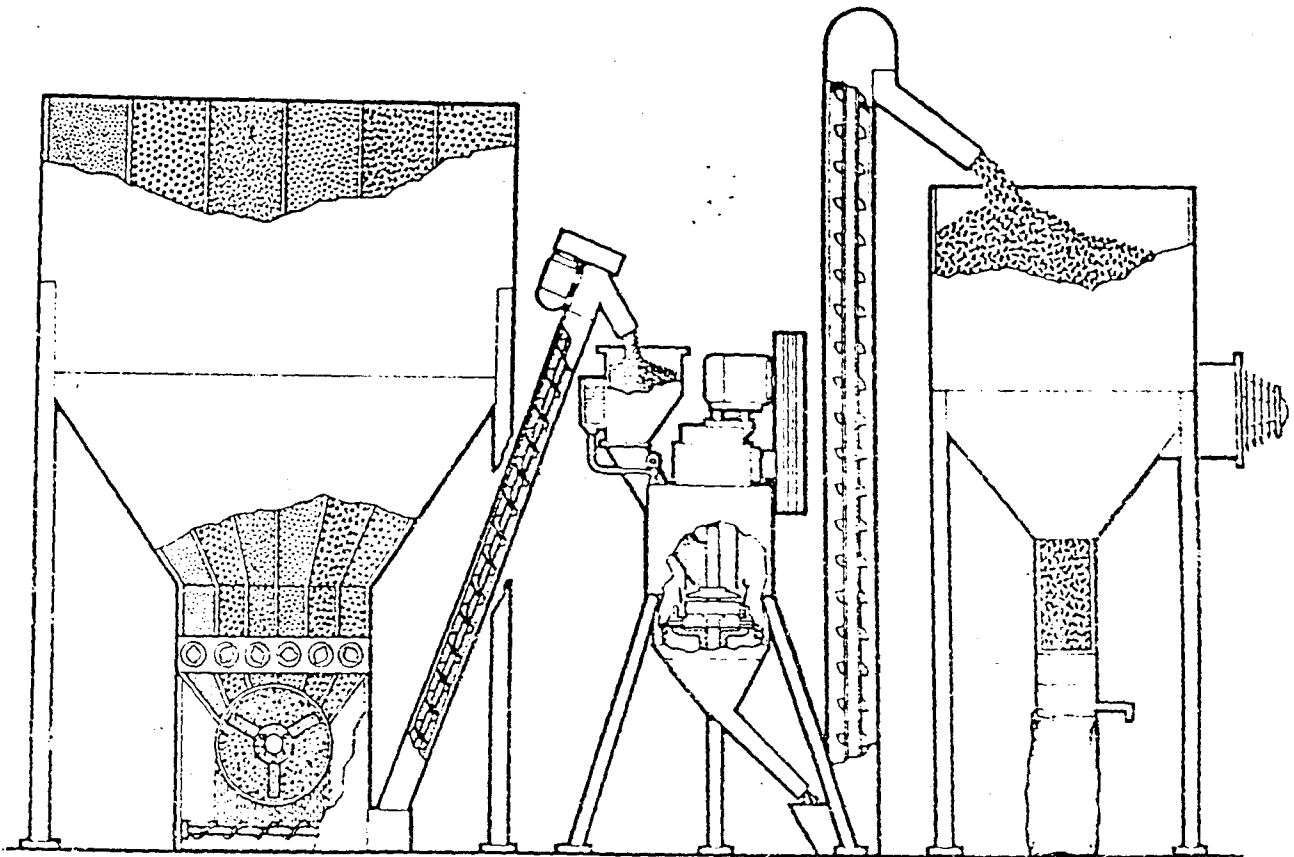


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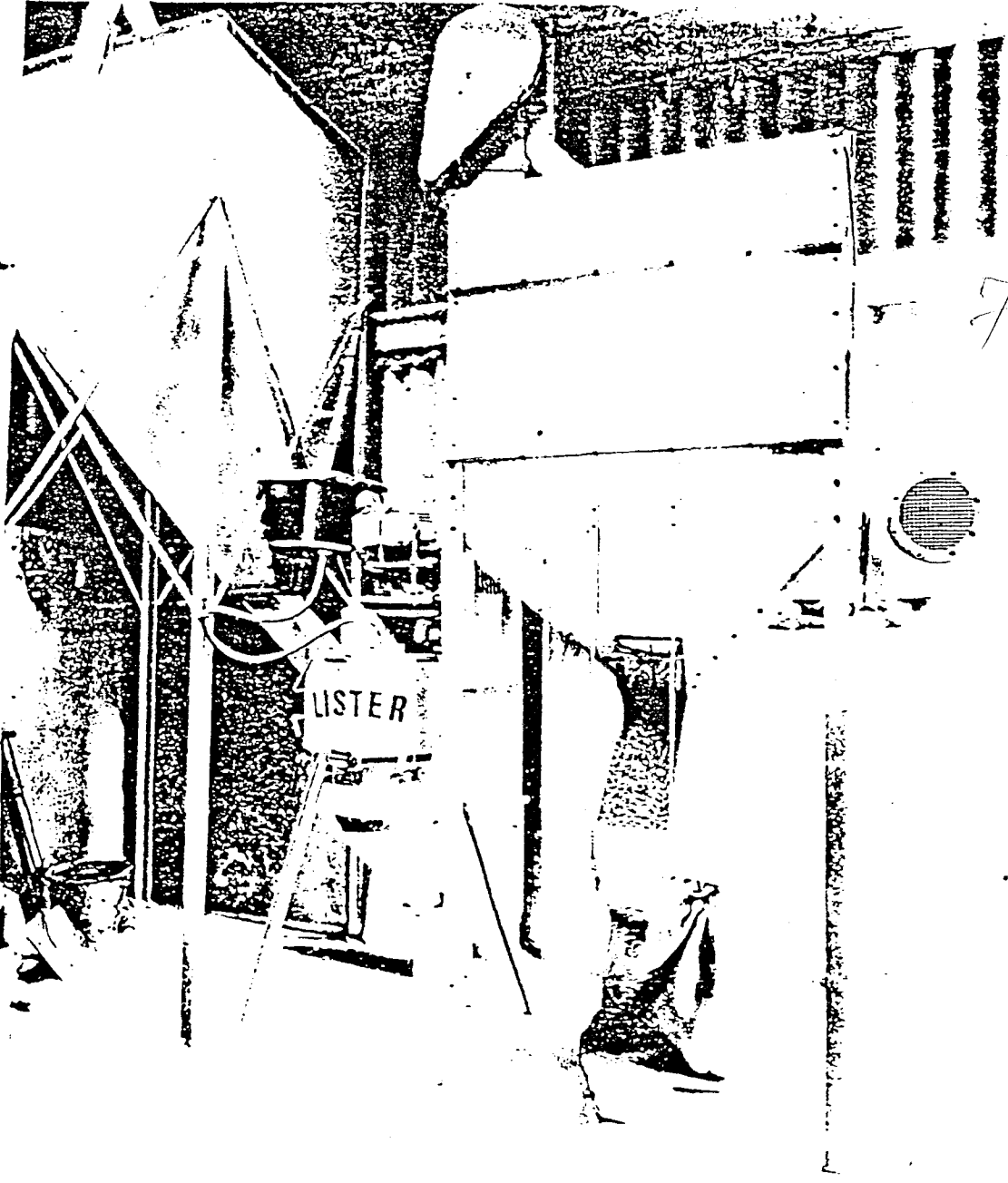
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1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

Project Title: Chinese Cabbage Marketing  
Country: Republic of Korea  
Prepared by: Mr Kim Jin Woo

Funded by the Government of Japan  
and  
Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.



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## Chapter - I .

### ( Summary )

1-1. The project focuses on increasing the income of farmers by providing better alternative cropping pattern, reducing the cost of cultivation, provide better marketing opportunities for cash crop and gainful deployment of family labour in Sohari and Mugapri of Chowol myon (district), Gyeonggi do of Republic of Korea.

1-2. The project envisages the increase of income originated from livestock from 10% at present to 20% of total farm income through cattle raising.

1-3. The project will be financed in different phases by the Chowol primary cooperative say for providing 2 to 5 cattle heads per farms, green houses and paddy transplanters and combine harvesters. The project also provide farm guidance system through the activities of crop-unit for better farming technics and better involvement of member farmers.

1-4. In the farm mechanization activity 6 paddy transplanters and 8 combine harvesters will be financed during two years on community utilizing basis.

1-5. For all activities primary cooperative will provide 70% of investment and some important operating cost as loan at 10% interest rate per annum and remaining 30% will be contributed by the borrowing members.

1-6. All inputs will be provided through the cooperative channel so as to decrease the purchasing cost and ensure quality material.

1-7. The benefit cost ratio of the project comes as under:

- o. B.C.R per cattle raising will be 1.3
- o. The FRR analysis result for the project of paddy transplanter is more than 50% and that of combine harvester is 22%.

1-8. At the break-even point for the paddy transplanter was 4.8 ha. and for combine harvester was 9.6 ha. therefore minimum unit of 10 ha. was envisaged in the project to ensure there should be certain economic benefit by enlarging the machine's utilization ratio to have both of the implement on community basis.

1-9. Besides above it has been felt that through providing farming guidance, active involvement of the member farmers in the affairs and the business performed by cooperative will be insured.

## Chapter - II

### (Background)

#### 2-1. Location and topography.

2-1-1. The Chwol myon (district), one of 14 districts which comprise Kwangju gun (county), placed in the south east direction of Seoul, the capital city of Republic of Korea, and it is 48 km from Seoul about 1 hour drive (Appendix -1). Road connection with other region also well organised. One semi-express way is piercing this district and one express way, which is the main ~~express~~ <sup>better</sup> connecting Seoul to Pusan, is now under construction in the central part of the region.

2-1-2. Short distance and good connection with populated city such as Songnam, Kwachon and Seoul, most populated in Korea and the capital city of the Republic is good for the farmers in this area, because they have <sup>better</sup> marketing opportunity and also they can reduce other cost for marketing. They also have more wide range of crop selection along with the benefits from marketing.

2-1-3. This area is belong to semi-mountainous region and arable land acreage among the total acreage is no more than 22%.

Total area	Farm land			Non arable		
	Paddy	Up-land	sub-total	Forest	Others	Sub-total
ha. 5,702 (100)	(44) 549	(56) 706	(22) ha. 1,255	4,379	68	(78) ha. 4,447

2-1-4. Average farm land per farmers is 1.3 ha. and that is a little larger than national average.

The farm land are placed between valleys along with the streams and among the farm land only 44% is paddy field.

Region	No. of farm	Paddy		Up-land		Total		Average
		Acreage	%	Acreage	%	Acreage	%	
District	991	549 <sup>ha</sup>	44	706	56	1,255	100	1.27 <sup>ha</sup>
Project area	157	104.4	50	105.4	50	209.8	100	1.3
(Sohari)	(82)	(62.1)	(58)	(44.2)	(42)	(106.3)	(100)	(1.3)
(Mugapri)	(75)	(42.3)	(41)	(61.2)	(59)	(103.5)	(100)	(1.4)

## 2-2. Socio economic environment.

2-2-1. The weather condition in this area is tougher than southern part of peninsula where the production cost for winter cropping in green house is lower than other region. The cold winter require more heating and other facility that cost high and make farmers in this area can't afford. to compete with others in temperate area and give the farms less opportunity in increasing farm income.

2-2-2. The vicinity to Seoul has two faces to this area, good thing is easy in access to large consuming center and bad things are this region is belong to the Green Belt area which urbanization and other constructing activities are strictly prohibited.

2-2-3. Close and easier contact with the information from the capital has another side effect that pulled out more young people to the cities and made this society more dependent on aged people and woman work force in farming that might be resulted in low agricultural productivity.

2-2-4. Despite above mentioned weak points, the farmer income in this district is still larger than national average but without more harmonized efforts no more dramatic increase of farm income and better living is not foreseen. (Appendix - 11). To overcome this problem, farmers in this area and primary cooperative should do work hard so as to develop this area and to make this area best place to live.

## Chapter - III

### (The Chowol primary cooperative)

3-1. It is general rule that one district has one multipurpose agricultural cooperative. In Chowol district which has 19 villages, 1,712 households and 929 member farmers out of 991 farming households are actively participated in the activities undertaken by the Chowol primary cooperative.

3-2. The cooperative with one president / chair-man, one general manager and 16 staff covers almost all activities directly or indirectly related to member farmer's daily living and farming. (Appendix - 3). The participation of the people in this area to the coop is very high as below.

District	Household (A)	Farm household(B)	Member farmer(C)	Ratio	
				B/A	C/A
Total	1,712	991	929	54%	94%
Project village	181	157	157	87%	100%

3-3. The financial status at the end of 1986 of the cooperative is as below.

(Unit : in won. 1,000.)

Asset		Liability and capital	
Total asset	3,252,544	Total liability and Capital	3,252,544
Total banking asset.	2,621,472	Deposit	1,754,646
Account receivable.	255,470	Borrowed money from NACF.	822,247
Inventory.	44,149	Account payable.	167,925
Insurance asset.	36,667	Insurance liability.	39,020
Fixed asset.	211,696	Other liability.	252,984
Other asset.	83,090	Share capital.	86,076
		Reserved fund	123,224
		Revenue	6,422

3-4. To strengthening the cooperative the people in leading position and in management have made systematic approach as below.

3-4-1. Organized infrastructure in every 19 villages as a backbone for Coop. movement so as to ensure better participation and gave proper guidance to elect capable personal as a village representative.

3-4-2. At present the Coop. has very strong and active infrastructure that is 19 farming societies, 19 women's and 19 youth groups and also they have farmers crop oriented 5 crop-units which ~~were~~ <sup>are</sup> working very effectively.

3-4-3. From the start the Coop introduced "one village one officer assignment system" that was very effective to ensure better relation between member farmers and village assigned officers. The officer assigned certain village should have a good linkage with the villagers in his jurisdiction and participating into the village meeting which held regularly in the village, thus they could develop very close relationship.

3-4-4. In preparation of the yearly project implementation the Coop. leaders and member farmers had made frequent discussion to induce more participation and the yearly target should be prepared on the basis of member farmers demand.

3-4-5. As a result of good cooperation between members and Coop. management, the Coop. has made great strides in



business development year after year. The comparison of the business expansion between 1985 and 1986 is as below.

(The working report in 1986) (Unit in million won)

Business	Target	Result	Ratio	Growth rate from 1985
Deposit	1.291	1.755	136%	140
Loan { Mutual fund	1.020	1.041	102	140
	Central	864	117	146
Farm in-put supply	166	166	100	103
Commodity supply	820	994	121	127
Marketing	1.188	1.264	106	111
Ware house.	10	8	80	81
Transportation	14	14	97	109
Insurance	517	664	128	112
Total	5.716	6.768	118	128
Rate of dividend in 1986		10% to share capital.		

3-4-6. Until now this cooperative and member farmers helped and developed quite well, but they should do more coordinated effort to sustain their high income despite of deteriorating and unpredictable farming situation.

## Chapter - IV.

### ( The project )

#### 4-1. The need of the project.

4-1-1. Since the project area is scatteredly populated and the member farms are not utilizing the services of the primary cooperative fully. The member farmers are taking little interest of the activities of the society and are availing the facilities provided by other Coop. which has better proximity by road to this area.

4-1-2. The old aged persons and woman folks are not engaged actively in the economic betterment of the family, it is necessary to engage them in gainful employment.

4-1-3. In peak farming season of paddy transplanning and harvesting of paddy, due to labour shortage, the cost of labour adversely affects the viability of farming that it is necessary to have joint community effort to reduce the cost so as to make agriculture more remunerative to give better income to the farmers. Keeping in view of above mentioned difficulties faced by the member farmers, the project, now under preparation, envisage such activities like increasing farm mechanization to face labour problem in peak season, to deploy old aged person and other family members in gainful employment in cattle rearing

so as to increase family income. Similarly by providing adequate farm guidance for improving agricultural technics to raise cash crop and providing green house farming the member farmers will have more harmonious relations with the primary cooperative which ultimately will provide better cooperation and involvement.

#### 4-2. Objective of the project.

4-2-1. To increase the income of member farmers through increased productivity of agriculture and allied activities.

4-2-2. To induce cooperative spirit and active participation of member farmers in existing Coop.

4-2-3. To increase job opportunities so as to increase their income.

#### 4-3. Area of operation.

4-3-1. In chowol district, 2 villages, namely Sohari and Mugapri, will be selected as project area. These two area has some distinctive advantage, both villages are well connected by the road to marketing center in Seoul (Appendix-1 and 2).

4-3-2. This area has been declaired green-belt which itself reveals that there will no fodder shortage and has

enough scope for adopting diversified cropping pattern as well as use of improved farm mechanization practices.

4-3-3. This area has almost 20% of area under paddy cultivation as to compare to the area under paddy in the district and average acreage comes to 1.3 ha. which is higher to district average. Most of the farmers belong to the farming group of 1.0 ~ 1.5 ha.

#### 4-4. Project component.

Followings are the project components.

- Farm mechanization.
- Cattle fattening.
- Reorganization of cropping pattern.
- Give adequate marketing support.

##### 4-4-1. Farm mechanization.

As described earlier the area has been facing the problem of labour shortage in the peak farming season of paddy transplanting and harvesting and high rise labour cost is adversely affecting the viability of the small farmers, it is therefore supposed that transplanters and combine harvesters should be made available in this area in adequate numbers so as to relieved the farmers from the shortage of labour problem, of-shooting labour requirement during the month of may to june and october. (Appendix - 4. 5).

The project envisage financing of 6 paddy transplanters in project period of 2 years. This transplanters will be financed and supplied by the primary cooperative to the farmers community use. Similarly 8 combine harvesters will be made available to member farmers for the same project period of transplanter.

#### 4-4-2. Cattle fattening.

At present the income from livestock activities generate less than 10% of the total farm income in this area in average. There is a need of increasing this income by at least 20% so as to create job for aged persons and young children to subscribe in the total income of the farmers. Moreover, By introducing cattle fattening even cold winter can become income generating season. It is therefore proposed to provide initially 2 cattle heads to farmers in the area who owns less than 2 heads <sup>thus</sup> let all farmers have 2 heads for the shorter project period of 2 years with subsequently will be increase to 5 heads with a project period of 5 years which ultimately will result in achieving desired objectives. The cattle will be purchased from the market by the farmers themselves and farmers will be financed by the primary cooperative.

#### 4-4-3. Reorganization of cropping pattern.

Since the area has varied cropping pattern and some of crops like paddy, peanut, potato, chinese cabbage, raddish. etc are grown traditionally (Appendix - 4.10.11).

Some of the cash crops like tomato, green pepper, egg-plant, strawberry are also introduced and being grown (Appendix - 11). These cash crops have ready market but price is highly fluctuating and generally the aged farms find it very difficult in want of better cultivation technics. The project will be provided in two span, in the first span the technics for cultivating of these cash crops will be demonstrated through the leading farmers and through technical experts and during the second span green houses will be set up and the acreage will be increased so that in off season better marketing opportunities can be available.

In the first span running for 2 years strengthening and supporting for forming of crop-unit procedure will take place and at the same time providing of better cultivating technics and marketing practices will be done.

During the second span of 3 years green house farming will be provided through financing from the primary coop. Materials for green house will be acquired through the cooperative.

#### 4-4-4. Post harvesting operation.

The primary cooperative will positively participate in marketing procession by supplying the packing materials, delivering the market information through the telephone and they also will help in lowering the transportation cost to market area by offering truck belong to the Coop. to circulate the production site and transport to market with reasonable fare. It is also necessary to form active crop-unit to ensure more fruitful cooperation in above

mentioned practices, by this way farmers are getting competitive prices through primary coop.

#### 4-5. Investment program and the effect of the project.

##### 4-5-1. Phasing of the development program.

Project	First phase		Second phase	
	Duration	Movement	Duration	Movement
Farm mechanization	2	<ul style="list-style-type: none"> <li>o. Supply machines (Paddy transplanter, combine)</li> </ul>		/
Cattle fattening	2	<ul style="list-style-type: none"> <li>o. Financing loan for farmers, let them have 2 Cattle heads</li> </ul>	3	Supply more loan to increase cattle head to 5 heads
Reorganization of cropping pattern.	2	<ul style="list-style-type: none"> <li>o. Introducing and increasing cash crop cultivation.</li> <li>o. Strengthening crop-unit activity</li> <li>o. Technical assistance</li> </ul>	3	<ul style="list-style-type: none"> <li>o. Introducing green-house farming.</li> <li>o. Specialization in crop cultivation.</li> </ul>
Marketing support	2	<ul style="list-style-type: none"> <li>o. Delivering market information.</li> <li>o. Supply packing materials and transportation supporting.</li> <li>o. Establish favourable marketing circumstance.</li> </ul>	3	<ul style="list-style-type: none"> <li>o. Marketing all product through Coop. channel.</li> <li>o. Money will deposited into banking account.</li> </ul>

## 4-5-2. Yearly investment program.

(Unit; in ₹ 1,000)

Project	Item	First year			Second year			Total		
		Farm	Volume	Loan	Farm	Volume	Loan	Farm	Volume	Loan
Farm mechanization	Transplanter		3	7.749		3	7.749		6	15.498
	Combine		3	21.000		5	35.000		8	56.000
	Sub-total		6	28.749		8	42.749		14	71.498
Cattle fattening	Cattle			33.180		134	56.280	213	213	89.460
	Fodder	79	79	10.823	134		18.358			29.181
	Sub-total			44.003			74.638			118.641
Total				72.752			117.387			190.139

## 4-5-3. Project effect.

Project	First year		After second year	
	Income increase (₹ 1,000)	Employment Handdays	Income increase (₹ 1,000)	Employment Handdays
Mechanization	4.047	41.533	8.312	43.606
Cattle fattening	25.404	3,286.4	43.090	5,574.4
Total	29.451	.	51.402	.

\* Note: (1) Labour saved through farm mechanization comes from May to June and October, the peak season for farming labour.

a. Except these direct effect we could expect other indirect or invisible effect such encouraging the cash crop introduction and more effective utilization of labour.



# Chapter - V

( Details of the project and implementing program )

## 5-1. Farm mechanization project .

### 5-1-1. Background

o. The beginning of national industrialization project which started and accelerated from 1960s brought great changes in every aspects of Korea. Most impressive thing which have undertaken in urban and rural area was high rising buildings and more job opportunities in promising places/fields and dramatic urbanization. Better opportunity for better living lured many younger and more capable personals to move out from the rural area /agricultural sector to urban area that resulted more dependence on aged and women work force for farming and high rise in farming cost and deteriorating labour quality deprived pink coloured dream of rural life and future from the agricultural sector.

( Changes of population and workforce in agriculture )

Classification		1965	1970	1975	1980	1985
Farm population (index)		100	91.2	83.8	68.4	53.9
Farm population by age ( % )	Under 20	15.4	14.4	13.0	5.1	2.3
	20 ~ 39	47.3	43.9	39.1	34.8	32.4
	40 ~ 59	32.5	35.5	39.5	49.2	51.0
	60 ~	4.9	6.3	8.5	11.1	14.3
Farm population by sex ( % )	Male	61.7	58.4	58.5	56.2	56.6
	Female	38.3	41.6	41.5	43.8	43.4

o. As we can see from above mentioned table we could notice that farming is undertaken by elder generation and women, thus agricultural productivity is restricted further. The stiff decrease in workforce from rural area, not only made the farming more difficult but also made most costlier and lowering productivity and resulted into low income.

o. The condition of labour/population in this project villages are as below .

Village	Sexual composition			By age			
	Male	Female	Total	under 20	20 ~ 39	40 ~	Total
Sohiri	212	205	417	117	128	172	417
Mugapri	191	193	384	119	99	166	384
Total	403 <sup>(50)</sup>	398 <sup>(50)</sup>	801 <sup>(100)</sup>	236 <sup>(29)</sup>	227 <sup>(28)</sup>	338 <sup>(43)</sup>	801

More-over, there are 28 households which have persons older than 40, that means they have no young generation who will succeed their parents and all farming should be done by those elderly or employed laborers.

In such case we can't expect the land will be fully utilized and they could earn favorable income.

o. To overcome such drawbacks in agricultural development, the government and agricultural cooperative have taken initiative for farm mechanization by supply<sup>of</sup> farm machinery.

Major farm machinery financed and supplied by this programs are power-tiller, farm tractor, paddy transplanter, combine harvester, grain dryer and power sprayers.

But small farm size, concentration of farm activities in

relatively short period of the year, say from the spring to Autumn and dominance of paddy growing that demand different working & machinery in every different growing sequence not only hamper the mechanization but also made difficult to increase the utilization.

At beginning farmers motivated to purchase individually whatever the capacity of the machinery and that resulted for one reason of high indebtedness in rural area. In present year purchase and utilize it community base was promoted especially <sup>for</sup> high priced and high capacity machinery such as paddy transplanter, combine, tractor, dryer and speed sprayer. But some machines like farm tractor, dryer and speed sprayer are less favoured and in case of tractor it has strong competition with already fully supplied power-tiller that in this project paddy transplanter and combine harvester will be financed and supplied as a joint/community utilization base.

5-1-2. The effect we expect from farm mechanizations are

- o. Possibility of reducing the peak demand for farm working that is mostly concentrated from May to June and October.

(Appendix - 4). From that saved labour can be converted into other activities and also relieving the labour demand and ultimately lowering the farming cost.

- o. Lessen the intensity of working and make farming easier.

- o. Timely working is possible and thus increasing the

farm productivity and betterment in living.

### 5-1-3. Farm mechanization policy.

o. Most farmers have tendency that to buy high priced and high capacity machinery individually and that resulted over-investment. To prevent such over-investment and betterment for member farmers in mechanization program we should establish principal firmly that high priced and high capacity machinery must be financed on the basis of joint utilization.

o. In this project those who want to be a beneficiary of the farm mechanization should form joint utilization group of total operation acreages are not less than that of Break Even Point of specific machines (Appendix - 6)

o. In regard of break even point and expectation of high economic return the acreage limit for machinery was established no less than limited acreage. The guide line of joint farming acreage for paddy transplanter is 10 ha. and combine harvester also needs no less than 10 ha. of working area. (Appendix - 5.6.7.8.9)

### 5-1-4. Economic viability.

The economic viability of farm machinery are as follow.

Machine	B.E point	Financing condition		FRR	Labour saving
		Acreage	Usage		
Paddy transplanter	4.8 ha.	10 ha.	Joint use	>50%	24.1 manday/ha
Combine harvester	9.6	10 ha.	Joint use	22%	27.0 "

## 5-1-5. Project implementing program.

### a. Machinery supply scheme.

This scheme was established on the basis of paddy field, number of machinery already existing in the villages and assumed that all paddy field will be mechanized (Appendix - 5.6.7. & 9).

Village	Paddy field	Supply program					
		Paddy transplanter			Combine harvester		
		Total	Existing	Additional	Total	Existing	Additional
Sohari	62.1 <sup>ha</sup>	6	2	4	6	1	5
Mugapri	42.3	4	2	2	4	1	3
Total	104.4	10	4	6	10	2	8

### a. Yearly target.

(Unit of loan; in 1,000 Won)

Village	1st year target				2nd year target				Total			
	Transplanter		Combine		Transplanter		Combine		Transplanter		Combine	
	No.	Loan	No.	Loan	No.	Loan	No.	Loan	No.	Loan	No.	Loan
Sohari	2	5,166	2	14,000	2	5,166	3	<del>21,500</del>	4	10,332	5	21,000
Mugapri	1	2,523	1	7,000	1	2,523	2	14,000	2	5,166	3	21,000
Total	3	7,749	3	21,000	3	7,749	5	35,000	6	15,498	8	56,000

\* Loan for transplanter include the loan for nursery box.

$$\#13,000 + \#570 \times 2.250$$

### a. Financing term.

Machine	Source of Loan	Interest	Loan	Duration
Transplanter	Farm mechanization	10% A.N	# 1,300,000	1 year grace 6 year pay
Nursery box	fund "	"	# 570. per box	1 " 4 "
Combine	"	"	# 7,000,000	1 " 7 "

o. The effect of the project. (Labour saving effect)

Village	Machine	First year		Second year		After 3rd Year	
		Labour manday	Amount (₹.1,000)	Labour manday	Amount (₹.1,000)	Labour manday	Amount (₹.1,000)
Sohari	Transplanter	482	4.820	464	4.640	464	4.640
	Combine	540	5.400	1,350	13.500	1,350	13.500
	Sub-total	1022	10.220	2,314	23.140	23,140	23.140
Mugapri	Transplanter	241	2.410	482	4.820	482	4.820
	Combine	270	2.700	810	8.100	810	8.100
	Sub-total	511	5.110	1,292	12.920	1,292	12.920
Total	Transplanter	723	7.230	1,446	14.460	1,446	14.460
	Combine	810	8.100	2,160	21.600	2,160	21.600
	Total.	1,533	15.330	3,606	36.060	3,606	36.060

o. Net income from the project

Village	First year (₹.1,000)	After second year (₹.1,000)
Sohari	2.698	5.505
Mugapri	1.349	2.807
Total	4.047	8.312

o. Labour saved during the peak demanding of farming let the cost- for labour decreasing and the labour saved from the paddy cultivation can be used to other activities. In farm mechanization project we should think of that the labour saved through the project must have other alternative working opportunities for farm income increasing, it not saved labour will be idle without producing good result.

## 5-2. Cattle fattening project.

### 5-2-1. Background.

o. Average farm size of this area is 1.3 ha., rather larger than national average size of 1.1 ha., But that is still not large enough to give good income for better living. To have more income from off-farm activity or better utilization of their land and their labour are required but the opportunities also limited.

Most farmers in this area have limited opportunity not only in finding the jobs in non-farm activities but also in better utilization of their land and labour by introducing vinyl house during the winter season, because the weather condition in this area is not favorable.

o. In this mountainous area other farming is difficult, but cattle raising is easier than other area since enough grass is available for animal feed and they can reduce the cost by using agricultural by-product as fodder.

o. In most farm area, small size cattle fattening is very important not only as a farm income generating source but also important in increasing agricultural productivity.

### 5-2-2. Economic viability.

Cattle fattening give farmers direct and indirect benefits as follow;

o. Direct benefit; we can expect value added income of 322 thousand won from one head of shortterm fattening

during one year.

o. Indirect benefit

- Increasing the soil fertility by using cattle shit and other materials from the shed and agricultural production will be increased.

- Lowering the cattle feeding cost by using agricultural by-product.

- Utilization of labour force will be increased by introducing the cattle fattening.

5-2-3. Financing policy.

o. Financing item.

- 70% of cattle purchasing cost will be financed with medium-term loan of 10% interest rate per year.

- 70% of concentrate fodder purchasing cost will also be financed by short-term loan through the Coop.

- During the first year of project implementing, farms without cattle will be supported loan for 1 head and cost for fodder. Those who have one head of cattle will be financed in second year of project one more head to reach 2 heads and increase farm income from livestock more than 600 thousand won.



## 5-2-4. Financing program.

### o. Yearly implementing program.

Village	Farms			First year		Second year		Total	
	Total	without cattle (A)	with one head (B)	Farms without cattle	Heads	Farms (A+B)	Heads	No. of farm	Heads
Sohari	82	49	25	49	49	74	74	74	123
Mugapri	75	30	30	30	30	60	60	60	90
Total	157	79	55	79	79	134	134	134	213

### o. Yearly financing program.

Village	Financing item	First year	Second year	Total
Sohari	Cattle	20.180	31.080	51.260
	Fodder	6.713	10.138	16.851
	Sub-total	26.893	41.218	68.111
Mugapri	Cattle	12.600	25.200	37.800
	Fodder	4.110	8.220	12.330
	Sub-total	16.710	33.420	50.130
Total	Cattle	32.780	56.280	89.060
	Fodder	10.823	18.358	29.181
	Total	43.603	74.638	118.241

### o. Project effect,

(Unit; in ₹ 1,000)

Village	First year		Second year		Total	
	Value added	Employ	Value added	Employ	Value added	Employ
Sohari	15.757	2.038.4	23.796	3.078.4	39.553	5.116.8
Mugapri	9.647	1.248.	19.294	2.496	28.941	3.744
Total	25.404	3.286.4	43.090	5.574.4	68.494	8.860.8

### 5-3. Reorganization of cropping pattern .

5-3-1. This programme will be implemented in two phases. In first phase following intensive activities will be undertaken to increase the output through increasing productivity by adopting new techniques of cultivation and scientific agricultural practices as well by bringing more area under cash crops; -

- o. Introducing cash crop cultivation; - Cash crops like tomato and green pepper are being grown in this area in small scale. These crops bring higher returns but require more labour and intensive working. Therefore, efforts will be made to increase the acreage under these crops.

- o. Crop-units in village levels will be formed, crop rotations will be introduced keeping in view the requirement of the farmers themselves as well as remunerative nature of crops. For this technical assistance for farming and marketing of crops will be provided through farm guidance and market information delivery system through coop.

- o. Efforts will be made to establish reputation by quality production so as to have a ready demand in the market. In the first phase no financing is required. Only existing farm guidance system has to be reoriented so as to achieve the goal of increasing productivity of cash crops and also forming of crop units demanded.

o. In the second phase, an element of financing is introduced as the green houses will be provided. Under controlled conditions, controlled marketing strategy can be adopted, which would fetch better prices in off season. The duration of crop can be elongated, productivity can be increased and marketing timing can be adjusted so as to suit the requirement of the area as well ensure as better returns to the farmers.

#### 5-4. Marketing support.

With the adequate backward linkages by way of supply of inputs, farm mechanization and providing of technological know-how, it is expected that productivity of farms will increase with the increase in volume of out-put, it is pertinent to provide marketing support to farmers, which will enable them to get better prices. For this following steps will be taken in two phases; -

##### 5-4-1. Phase I.

o. Market information; - Market information regarding demand by the commodity, price and packing trend. etc. will be made available by the Coop. to farmers through telephone and crop-units.

o. Supply of standardised packing material; - Farmers will need standardised packing material to send their produce in marketable form. The adequate arrangement, therefore, will be made for supply of standardised

packing material by the cooperative.

o. Transportation :- Keeping the market demand in view, the transportation will be timed through trucks. The trucks will be circulated for collection of marketable surplus by the cooperatives, so that farmers can reduce transportation charges and they can also utilise the available labour for other farm activities, which otherwise would have to be deployed for delivering to the market place.

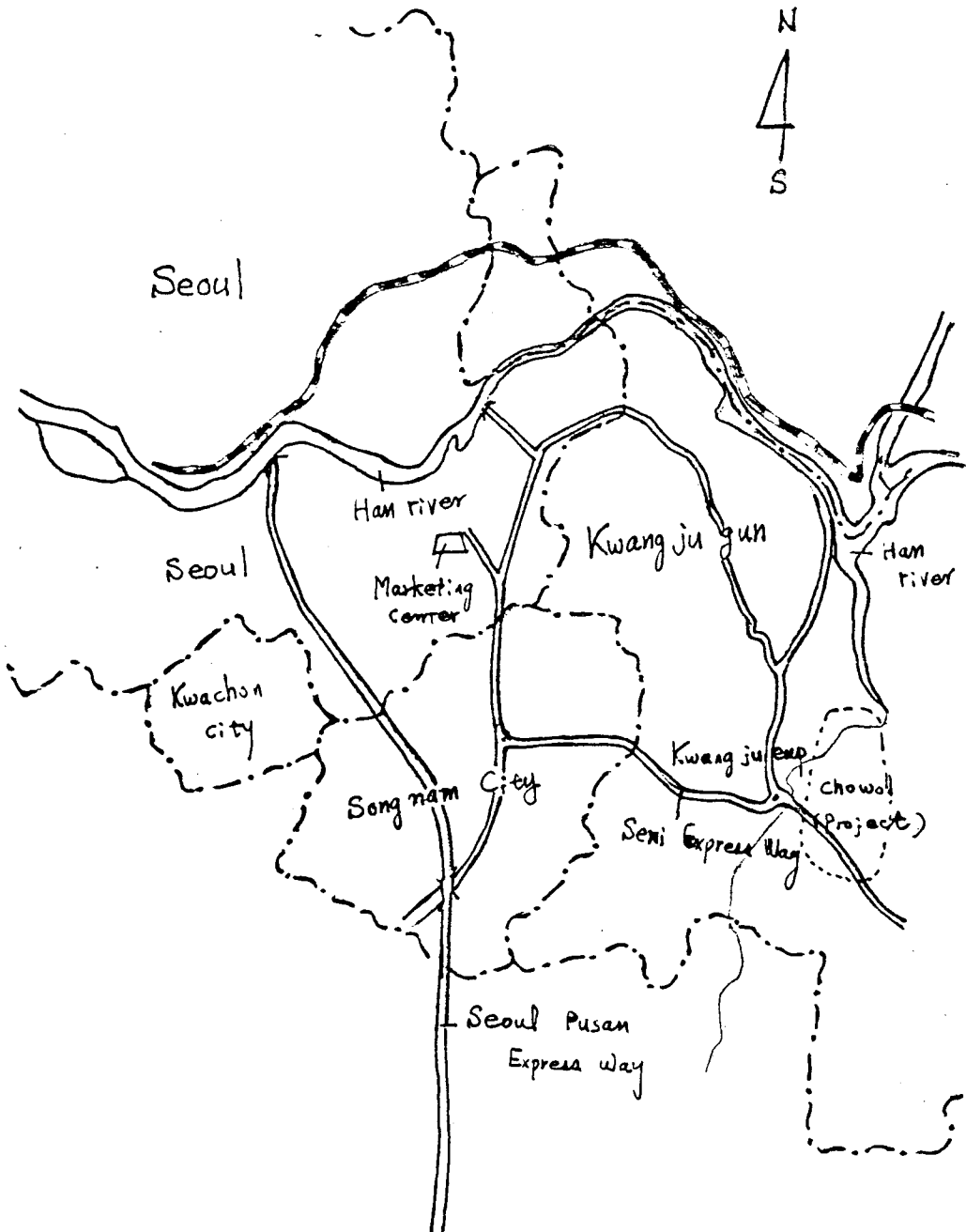
#### 5-4-2. Phase II.

o. In second phase, efforts will be made to procure entire marketable surplus of the farmers of project area by the cooperative. Because through the intensive marketing support in Phase-I would gain the faith of the members.

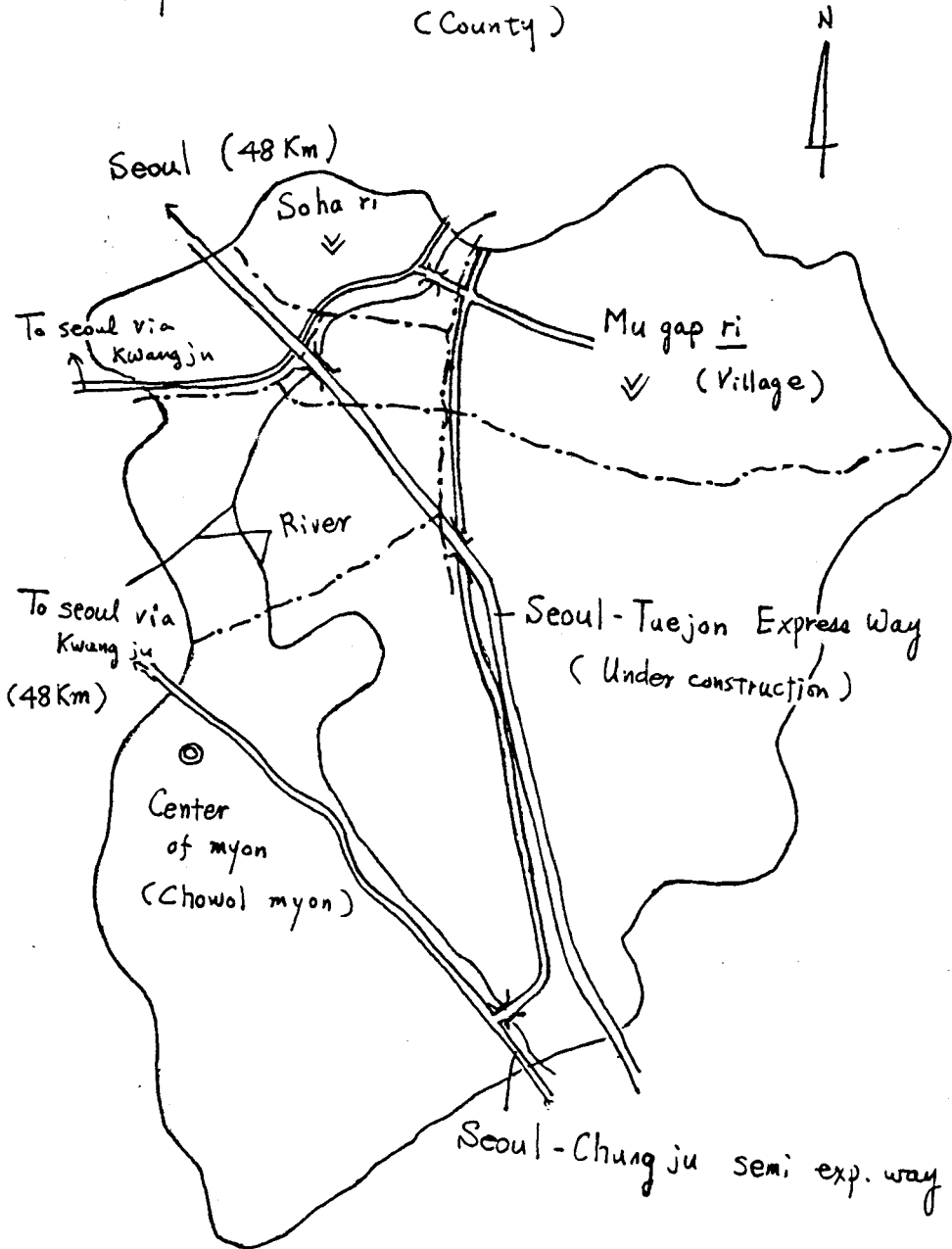
o. Money received through the sale proceeds of members, will be got deposited in the member deposit accounts, which will help members as well as cooperative.

- end -

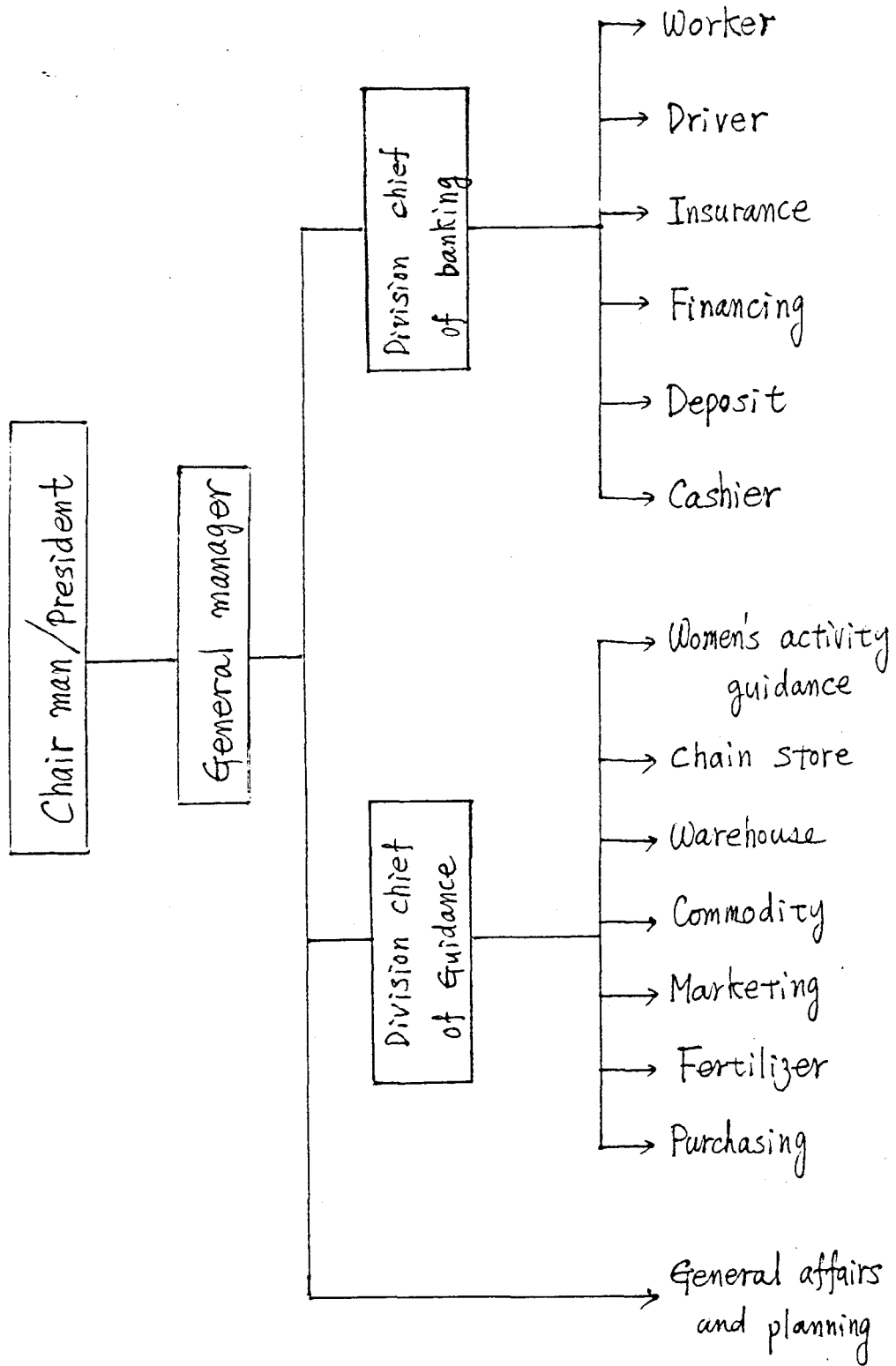
Map of Seoul vicinity



Map of Chowol myon  
(County)



Staffing ( Chowal Primary Coop. )



# Prevailing cropping pattern of some major crops.

Crop.	Month											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Paddy				+	+	△	△				□	□
Soy bean					△					□	□	
Sesame					△				□	□		
Peanut.					△					□	□	
Perilla				△					□	□		
Pumpkin			+	△	□						□	
Radish			△		□	□		△		□	□	
Chinese cabbage			+	△	□	□			+	△	□	□
Potato			△			□	□	△		□	□	
○. Sweet potato				+	△					□	□	
○. Welsh onion			+				△			□	□	
○. Carrot			△			□	□	△		□	□	
○. Cucumber			+	△	□						□	
⊙. Tomato		+	+	△	△	□		□				
⊙. Green pepper		+	+	△	△	□					□	
⊙. Eggplant		+	+	△	△	□					□	
⊙. Straw berry				△		△		△				
⊙. Tobacco			+	+	△	□	□					

\* Note ; (1) The cropping patterns shown in this figures represent the way of conventional / natural farming. But some crops sown earlier than April are semi-forced cultivation, in this case seedlings are grown in the hot-house until there are no late frost damage.

(2). ○ ; indicates semi-economic crops of more than 450 thousand wons per 0.1 ha. of cultivation are expected as a gross income.

⊙ ; economic crops more than 600 thousand wons of gross income from 0.1 ha.

(3) + ; Sown in the nursery plot. △ ; sown in the field and no transplant.  
 △ ; transplant in the field. □ ; harvesting.



## Labour saving effect of major farm machinery

Machine	Working ability	Working hrs. per ha.		Labour saved	
		Conventional (A)	Mechanized (B)	Work hours (C=A-B)	Manday (C÷9)
Paddy transplanter (4 rows)	Transplanting	233 hr.	16.1 hr	216.9 hr	24.1
Combine harvester (3 rows)	Harvesting + thr- eshing	268.7	25.8	242.9	27.0
Tractor	Plough + leveling + transporting	62	10.6	51.4	5.7

\*. Source ; Farm machinery hand book , the Ministry of Agriculture , Fishery and Forest (MAFF) and Rural Development Administration (RDA) .

Break even point of transplanter and combineA. B.E. Point calculation of paddy transplanter.

## o. Assumption .

- Fixed cost ; Depreciation for machine and nursery box .

Capital interest .

- Variable cost ; Fuel cost , maintenance cost for nursery box .

- Benefit ; Saved labour cost .

- Service life and salvage value ; 7 years for machine , 5 years for box and 10% .

## o. Calculation .

- B ; 24.1 manday  $\times$  10,000 won  $\times$  x ha .- F.C ;  $\text{₹} 1,453,500 \times 0.9 \div 7$  years ( Deprtn of machine ) +  $\text{₹} 1,453,500 \times 10\%$  ( M. C. I )  
+  $\text{₹} 1,453,500 \times 10\%$  ( C. I ) +  $\text{₹} 700 \times 2,250 \times 0.9 \div 5$  ( Deprtn of box )  
+  $\text{₹} 700 \times 2,250 \times 10\%$  ( C. I )- V.C ;  $\text{₹} 700 \times 2,250$  ( needed for one ha. operation )  $\times$  20%  $\times$  x ha . + 0.9 l  $\times$  10 hr.  $\times$  x ha .  
 $\times$  283 won for fuel .

$$\begin{aligned}
 - 24.1 \times 10,000 \times x &= 1,453,500 \times 90\% \div 7 + 1,453,500 \times 10\% + 1,453,500 \times 10\% + 700 \times 20\% \\
 &\times 2,250 \times x + 0.9 \times 10 \times 283 x + 315,900 + 175,500 \\
 &= 35,100 x + 2547 x + 186,879 + 290,700 + \frac{491,400}{\cancel{275,577}}
 \end{aligned}$$

$$24,100 x - 37,647 x = 477,579 + 491,400$$

$$\therefore x = 968,979 \div 203,353 \approx 4.8 \text{ ha.}$$

B. B.E. Point for combine harvester .- Fixed cost ;  $\text{₹} 17,500 \times 90\% \div 8$  years = 901,969 for depreciation $\text{₹} 17,500 \times 10\%$  ( m. c ) +  $\text{₹} 17,500 \times 10\%$  ( C. I )- Variable cost ; 3.9 l  $\times$  11 hr.  $\times$  199 won for fuel  $\times$  x ha .

- Benefit ; 27 manday saved per ha. of working .

- Calculation of B.E. Point .

$$270,000 \times x = 901,969 + 603,500 + 8537 x$$

$$270,000 x - 8537 x = 2505,469 .$$

$$\therefore \text{B.E. P} \approx 9.6 \text{ ha.}$$

Calculation of Financial Rate of Return

(Paddy transplanter working on 10 ha.)

Year	1	2	3	4	5	6	7
<b>I. Income</b>							
o. Labour required in conventional.	259						259
o. Using paddy transplanter.	18						18
o. Labour saved	241						241
o. Cost saved (@10,000 won x manday)	2,410,000						2,410,000
<b>II. Cost</b>							
<b>A. Investment cost.</b>							
o. Paddy transplanter procure.	1,453,500						
o. Nursery box. (2,250 x @700 won)	1,575,000						
Sub-total	3,028,500						
<b>B. Replacement and operating cost.</b>							
o. Machine maintenance (10%)	145,350						145,350
o. Fuel cost.	25,470						25,470
o. Nursery box replacement. (20%)		351,000					351,000
Sub-total	170,820	521,820					521,820
<b>Total Cost</b>	<b>3,379,320</b>	<b>521,820</b>					<b>521,820</b>
<b>III. Net incremental value (I-II)</b>	<b>(989,320)</b>	<b>1,888,180</b>					<b>1,888,180</b>

(FRR: More than 50%)

## \* Calculation Basis.

- Covering acreage; 10 Ha. (This machine will cover 10ha. during 20 days as a mean to increase and effectuate the machine; group utilization)
- Labour saved; Calculated by using the data supplied by MAFF and NACF.
- Transplanter and nursery box purchasing; # 1,453,500 for transplanter and @700 for nursery box. 200~250 nursery box priced @ 700 per each.  
In calculation averaged 225 boxes are necessary.
- Fuel cost; 0.9 litre gasoline x 10 hr. x 10 ha. x 283 won
- Nursery box replacement; 5 years service life and 20% of replacement so from the second year 20% will be replaced.

Calculation of financial rate of return  
(Combine harvester working on 10 ha.)

Year	1	2	3	4	5	6	7	8
<b>I. Income</b>								
o. Labour required conventionally	298.6							298.6
o. Using combine harvester	28.6							28.6
o. Labour saved	270.0							270.0
o. Cost saved (@ 10,000)	2,700,000							2,700,000
<b>II. Cost</b>								
A. Combine purchasing	8017.500							
B. Operating and maintenance								
o. Fuel	85.371							85.371
o. Maintenance (10%)	801.750							801.750
Sub-total	887.121							887.121
Total cost	8,904.621	887.121						887.121
<b>III. Net incremental value (I-II)</b>	(6,204.621)	1,812.879						1,812.879

(FRR ; 22 %)

## (Calculation basis)

- Working acreage ; Combine works 1 ha. per day and its working acreage should be enlarged to more than 10 ha. by joint using.
- Labour saved ; Assumed base on the data of MAFF and RDA.
- Combine ; Working capacity per ha. was assumed 11 hrs. and 8 years of service life with 10% of salvage value. Maintenance cost was expected 10% per a.n.
- Fuel cost ; 3.9 litre of diesel oil per working hour and 11 hours per ha. and 10 ha. of paddy cutting and threshing. Price of diesel of low sulfur is 199 won.

Farm machinery holdings of project area .

Village	Machinery	Number	Remarks
Sohari	Power tiller	59	Personal use
	Tracter	1	Joint use
	Paddy transplanter (4 rows)	2	1 for joint use 1 for personal use
	Combine harvester (3 rows)	1	Joint use
	Sprayer	22	Personal use
	Total	85	
Mugapri	Power tiller	75	Personal use
	Tracter	1	Joint use.
	Paddy transplanter (4 rows)	2	1 for joint use 1 for personal use
	Combine harvester (3 rows)	1	Joint use
	Sprayer	23	Personal use
	Total	102	

## Income analysis of major crops

Crop	Yield (Kg/10a.)	Gross income (A)	Production Cost (B)	Full cost (C)	Value added (A-B)	Net income (A-C)	Ratio (A-C/A)	Labour required		
								Male	Female	Total
Paddy	532	372.748	113.909	<sup>(won)</sup> <del>152.140</del> 152.140	258.839	220.608	59%	6.3	3.2	9.5
Soy bean	154	134.668	43.035	50.636	91.633	84.032	62.4	5.6	4.5	10.1
Sesame	67	337.331	76.870	85.856	260.461	251.475	74.5	4.9	6.3	11.2
Peanut	153	288.713	88.812	109.045	199.901	179.668	62.2	7.7	7.9	15.6
Perilla	108	146.050	38.017	41.764	110.033	104.286	71.4	5.1	5.8	10.9
Pumpkin	1.997	351.805	152.891	177.728	199.114	174.077	49.5	14.6	13.1	27.7
Radish (Spring)	3.438	419.092	152.230	189.108	266.862	229.984	54.9	7.1	7.1	14.2
" (Fall)	4.310	268.800	80.579	108.145	188.221	162.655	60.5	7.2	6.7	13.9
Chinese cabbage (Spring)	4.661	449.942	193.463	238.073	256.479	211.869	47.1	12.7	9.9	22.6
" (Fall)	8.281	525.015	85.619	114.006	439.396	411.009	78.3	9.2	8.9	18.1
Potato (Spring)	1.860	389.871	125.883	148.036	244.189	221.835	60	6.9	8.9	15.8
Sweet potato	1.913	473.000	70.097	87.879	402.903	358.121	81.4	6.5	7.3	13.8
Welsh onion	2.729	556.079	93.498	162.218	462.581	393.861	70.8	11.1	15.0	26.1
Carrot	1.872	534.766	103.664	152.785	432.102	382.981	71.5	8.6	11.9	20.5
Cucumber	3.170	554.961	217.903	272.871	337.058	282.090	50.8	16.1	20.5	36.6
Tomato	6.800	1,295.323	273.904	328.008	1,021.419	967.315	74.7	21.8	22.6	44.4
Green pepper	2.250	924.150	160.620	186.853	764.530	738.297	79.8	14.2	15.5	29.7
Egg plant	3.060	916.980	154.996	188.648	760.984	728.332	79.4	13.6	15.5	29.1
Tobacco (Dried)	249	609.894	133.374	204.775	476.520	405.119	66.4	19	20.4	39.4
Strawberry	1.688	900.267	245.903	300.439	654.364	599.828	66.6	18.9	21.6	40.5
Cattle fattening (1.8 heads can be marketed from short term fattening of 1.0 head)	438.2	1,246.459	934.892	936.865	321.567	319.494	25.4	31.3	10.3	41.6

\* Note; (1). Source: Income analysis report, Rural Development Administration.

(2). This report is the result of common farming practice.

# Farming practice and income analysis in chwool

Crop	Farming (Acreage/head)	Production	Value added	Net income
(Crop)	ha.	(MT)	--- (in 1,000 won) ---	
Paddy	549	2,921	1,421.026	662.138
Soj bean	86	132.4	78.804	72.268
Peanut	105	160.7	209.896	188.651
Sesame	85	57.0	221.392	213.754
Perilla	73	78.8	80.324	76.129
Sweet potato	58	1,110	233.684	207.710
Potato	65	1,209	158.723	144.193
Cabbage	95	6,147.5	330.541	295.867
Radish	90	3,486.6	204.787	176.688
Welsh onion	27	736.8	124.897	106.342
Cucumber	45	1,426.5	151.676	126.941
Pepper	71	1,597.5	542.816	524.191
Tomato	39	2,612	398.353	377.213
Strawberry	39	658.3	255.202	233.933
Sub-total			4,412.121	3,406.058
(per farmers)			(4,452)	(3,437)
Livestock	heads	heads		
Cattle	609	548	97.917	97.286
Milch cow	992	1,549.8 (milk)	124.759	118.521
Pork	3,320	6,640 heads	199.200	189.240
Chicken	250 mn (hen)	25,000 thousand	421.875	402.781
	100 mn (poultry)	500 mn heads	178,125	169,219
Sub-total			1,021.876	975.047
(per farmers)			(1,031)	(984)
Total			5,433.997	4,381.105
Average.			(5,483)	(4,427)

Livestock holdings in projected village

(Appendix-12)

(Cattle)

Village	Farms	Cattle holding			Korean cattle						Milch cow					
		Farms	Heads	Average	1 head		More than 2		total		1 head		More than 2		total	
					Farm	Head	Farm	Head	Farm	Head	Farm	Head	Farm	Head	Farm	Head
Sohari	82	33	59	1.8	25	25	5	11	30	36	.	.	3	23	3	23
Mugapri	75	45	139	3.1	30	30	8	38	38	68	.	.	7	71	7	71
Total	157	78	198	2.5	55	55	13	49	68	104	.	.	10	94	10	94

(Others)

In Mugapri there are one farm specialized in swine fattening and one farm specialized in laying hen.





FIRST

ICA TRAINING COURSE FOR STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA

NEW DELHI / BANGKOK / TOKYO / SEOUL

1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

Project Title: Integrated Area Development Project  
Country: Republic of Korea  
Prepared by: Mr Chong Hyun Baik

Funded by the Government of Japan  
and

Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.



# MARKETING OF CHINESE CABBAGE IN SOM-VILLAGE

Prepared by  
BAIK CHONG HYUN

NATIONAL AGRICULTURAL COOPERATIVE FEDERATION



# CONTENTS

1. Summary
2. Project Area
3. Introduction of Kwangjuk Primary Coop.
4. Project Components
5. Financial Analysis and Impact of Project Implementation

# 1. Summary

1.1 Project area is Som-village of Yangju-Gun Kyungki-Do of Korea having population of **135** persons with 35 households of which 24 households are members of Kwangjuk primary cooperative. The project area has 16.7ha of cabbage-field which is considerable as compared to the general cropping pattern. Also it contributes 2nd major source of income of the farmer.

1.2 Despite of all favorable circumstance and adequate infrastructural facility, the members of cooperative are facing the marketing problem for cabbage, particularly autumn cabbage the problem of marketing are pertinent as this cabbage can not be processed as Kim-Chi because it being army controlled area. No processing plan is allowed to be established. Therefore, to reduce the product marketing cost and to have a reasonable price of produce and also to stabilize selling price, improving of marketing structure is necessary. Therefore the project aims at reducing the product and marketing cost through joint activities for increasing the bargaining position and marketing.

1.3 The plan will be implemented through the crop-unit specially re-composed of cabbage growers' only through democratic ways and means. This crop-unit will have a head, a vice-head, an auditor and functional groups for general affairs, sales, purchase and guidance.

1.4 The crop-unit will be set up to facilitate Marketing channel under 2 models. Under Model "A", system of contracting consumer in the city and factory through direct sale has been proposed. Under model "B" the crop-unit will operate through primary cooperative under contract with another primary cooperatives or supermarket operated by NACF or member cooperatives.

# 1. Summary

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1.5 The project village, with involvement of primary cooperatives as other alternatives, will adopt tender sale system for advance sale in order to stabilize the price and ensure better price.

1.6 The project will have direct effect on farm income by reduction of cost through joint purchasing and joint shipping system which has been indicated at table 7.8 respectively.

1.7 The indirect effect will strengthen cooperative system through increasing the membership and business turnover. Also some change in crop-pattern can be expected through implementing the cooperative spirit and demand of consumers accordingly.

## 2. Project Area

2.1 Som-maul(village) belongs to Ser-Ku-Ri, Kkwnagjerk-Myun, Yangju-Gun, Kyunki-Do. This mountaineous village is located 36 Km from Seoul, 12 Km west from Uijungbu City, and 20Km west from Donglduchon-City respectively, transportation depends on road only from uijungbu-city to Munsan.(appendix 1)

2.2 Total population of this village is 184 persons with 35 households of which 24 households are members of Kwangjerk primary cooperative (see table 1)

(Table 1)

### Population

	Total population	Farm household	Non farm household	Member of pri-coop
Serku-Ri	604	167	68	167
Som-village	184	24	11	24

2.3 Som-village has 18.1 ha of paddy field and 16.7 ha of cabbage field respectively. The average household has 1.4 ha (see table 2)

(unit ; ha)

	Paddy field	Up-land	Forest	Other	Total
Serku-Ri	86	95	-	-	
Som-village	18.1	168	-	-	

2.4 Average farm income of Som-village depends on paddy growing and chinese cabbage. The crop-pattern and income level are shown bellow (see table 3. 4) Because of long winters from NOV. TO MAR.), Other crops can't be produced

(Table 3)

Crop Pattern & Marketing

month pattern		2	3	4	5	6	7	8	9	10	11	12	1
		1st	paddy										
2nd	spring cabbage												
3rd	autum cabbage												

: production period  
 : marketing period

(Table 4)

Farm income of Som village

(unit ; ha)

	Total Area	Total Product	Market			Gross Expense	Gross Income
			Q'ty	Unit Price	Total Amount		
Paddy	ha	kg	kg	Won	(1000W)	(1000W)	(1000W)
Spring	18.1	97,740	58,640	690	40,490	17,376	23,114
- cabbage	16.8	M/T	M/T	W/kg			
Autumn	16.8	1,512	1,209.6	45	54,432	22,680	31,752
- cabbage	16.8	M/T	M/T	W/kg			
Total	-	1,512	1,209.6	35	42,336	22,680	19,656
	-	-	-	-	137,258	62,736	74,522

\* Average farm income ; 3,105,000 Won

2.5 This area is controlled by Army, therefore no processing facilities can be established even if Kim-Chi factory or other value adding facilities are viable.

2.6 Considering on the cabbage selling, cabbage growers of this village would like to sell cabbage before harvest, that is why the price of cabbage is not stable. It is said almost 90% of autumn cabbage was sold in the field before harvest. (see Table 5. 6)

(Table 5)

Wholesale price of cabbage

(at Seoul)

(unit ; Won/kg)

Year	'82	'83	'84	'85	'86
Spring-cabbage	62	116	76	87	105
Autum-cabbage	73	59	42	103	48

2.7 a) particularly, some of the produces are also being supplied to army at decided price and direct sales to the urban consumer. The share of the sales to army and urban consumer doesn't exceed 30% of the produce.

(Table 6)

Month-Wise Whole Sale Price of Cabbage

(unit ; w/kg)

	10	11	12	1	2	3	4	5	6	7	8	9
84	79	68	51	59	125	211	216	157	88	103	149	102
85	89	46	38	103	90	71	97	112	48	68	85	225
86	-	-	-	-	-	-	-	-	-	-	-	-

2.7 Chinese cabbage is preferred by consumer of urban area as fresh vegetable. Moreover the chinese cabbage of winter season been growing in southern area occupied the market scene. Therefore the compete with the chinese cabbage of southern area is not desirable to store.

### 3. Introduction of Kwangjuk Primary Coop.

3.1 Kwangjuk primary cooperative which includes this Som-village consists of 14 villages(Ri) with 1,154 households of which 876 households are member farmers. (see Table 7)

(Table 7)

Total householdl		Member of coop.	Participation Rate (%)
Farm-household	Non farm households		
1,154	687	876	75.9

3.2 Organizational structure and infrastructure of this cooperative are as bellow.(see table 8. 9)

(Table 8)

Organization

Representative of G.A.	President	Board of Director	Auditor	Staff
51	1	6	2	18

(Table 9)

Infrastrucure

Farming Society	Women's Club	Crop Unit	Youth Club
14	14	7	13

3.3 Financial status and management are very sound and healthy.

(see table 10, 11)

(Table 10)

Condensed Balance Sheet

(the end of 1986)

(unit ; 1000W)

Asset		Liability & Capital	
Account	Amount	Account	Amount
1. Banking Bis	3,119,388	1. Banking Bis	3,074,680
- cash	18,385	-Saving	2,170,192
- deposit	280,000	-Borrowing (NACF)	690,291
- A/C Receivable	2,821,003	-A/C Payable	214,197
2. Econom Bis	201,019	2. Econom Bis	260,891
- Inventory	34,127	-A/C Payable	102,745
- A/C Receivable	166,892	-other	158,146
3. Insurance	70,866	3. Insurance	73,193
4. Fixed asset	142,958	4. Share capital	98,194
5. others	136,074	5. Reserved	123,008
		6. Revenue	40,350
Total	3,670,325	Total	3.670.325

(Table 11)

## Main business target &amp; results of 1986

(unit ; 1,000 ₩)

	'85 Results	'86		Ratio(%)	
	(A)	Target(B)	Results(C)	C/A	C/B
Deposit	140,128	1,787,000	2,170,192	154	150
Coop-insurance					
(1)Sale of policies	312,000	334,000	468,200	150	140
(2)Collect of premium	24,864	33,965	43,684	176	129
Purchase					
(1)Fertilizer	182,634	163,400	166,848	91	102
(2)Pesticide	29,608	24,800	31,024	105	125
(3)Consumer goods	432,324	586,000	625,910	145	107
(4)Others	98,634	74,906	75,112	76	100
Sales	561,735	814,000	774,966	138	95
Storage & Transport (2 trucks)	62,260	12,100	14,416	118	94
Profit					
(1) Gross	156,266	174,407	180,035	115	138
(2) Net	29,917	22,273	40,359	135	181
Dividen	8,498 (11%)		9,644 (10%)		

## 4. Components of project and implementing Plan

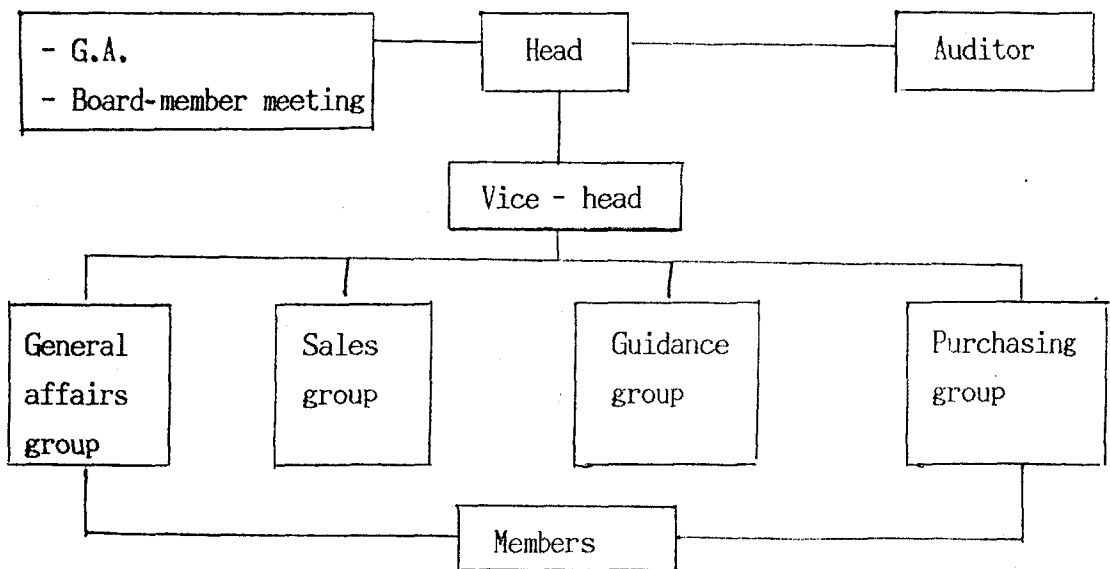
### 4.1-Reorganization of crop unit

4.1-1 Project will be implemented by the cabbage crop-unit under the democratic set-up as a functional unit of some village.

4.1-2 Cabbage grower crop-unit will be reorganized to adopt farm technique and to strengthen the joint activities for marketing of cabbage.

4.1-3 Member of crop-unit will have strong spirit of cooperative not only for their existence but also for future farm planning.

4.1-4 For the above mentioned purposes, structure and functions are recommendable as below. But grouping is adjustable in accordance with crops or geographical situation.



4.1-5 Composition and main functions are ;

- o General Assembly
  - Composed of all members.
  - Recognition and change of the agreement.
  - Dismissal of members.
  - Election and dismissal of head, vice-head auditor
  - Raising fund and management.
  - Decision of business year plan & budget.
- o Board meeting
  - Head, vice-head, auditor, group-leader
  - Screen of the qualification of member applications
  - Distribution of farm-information
  - Detailed implementing plan
- o General-affair group
  - Planning of joint work
  - Accounting
  - Keeping the records on meetings
  - General affairs and management
- o Sales group
  - Sales promotion
  - Collect the marketing information
  - Planning of marketing, grading, sorting packaging
  - Survey of market situation
  - Shipping-plan for time, quantity & market-base
- o Purchasing group
  - Joint purchasing of farm inputs
  - Planning of farm inputs needed
  - Installation of farm-machine or equipments
- o Guidance group
  - Inducement of new high technology
  - Planning of product-area or crop time base etc.
  - Members education, seminar, study visit



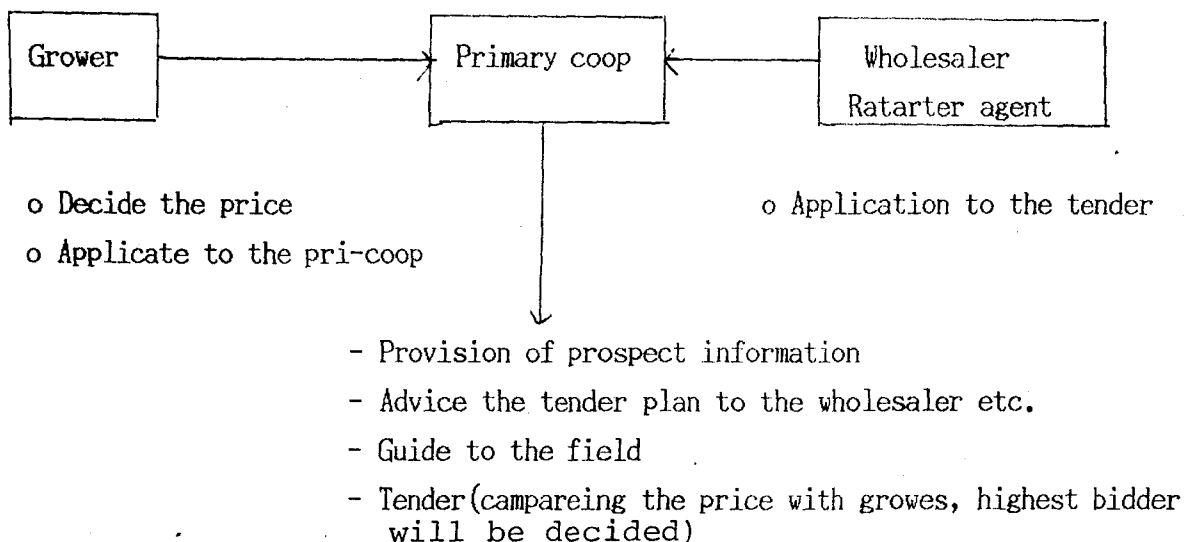
- o Head, vice-head & auditor
  - Represent of the crop-unit
  - Elected by G.A.
  - 1 year term and honorable
- o Group leader
  - Nominated by head
  - 1 year term & honorable

#### 4.2 Tender sale system

4.2-1 At present the trader are negotiating with the producers in advance by visiting the area, ~~after~~ deciding the price, the cabbage growers are paid the full value of produce in month of August and September on expected yield.

4.2-2 Farmers are supposed to look after the crop as per the contract which include irrigation, application of chemical and proper care of cabbage in charge of traders. Till such time, it is harvested and collected from the **fields** by the traders for marketing.

4.2-3 In commensurate with the marketing situation and practices, prevailing at present stage, the undermentioned marketing strategy will be followed.



(ex)

- Name of primary coop : Doyang coop in Jeannam Kohchung Kun
- Commodity : garlic

Total			Application		Result
Household	Area	Prospect harvest	Household	Application	-
856	150ha	1,125M/T	105	10 ha	33 M/T

- Comparison with the price (33 M/T)

	Unit price	Price per ha	Total amount
Individual sale	2,000 w/3kg	600,000 ₩	22,000,000
Tender sales	3,500	900,000	33,288,000
Defferance	1,500	300,000	11,288,000

\* 3kg = Jeab, 33 M/T = 11,000 Jeab.

#### 4.2-4 Role of the coops concerned

##### (1) Role of Kwanyjerk coop

- Appropriate and timely support for product & market (Loan, Agri-input etc)
- Provision of various information on product and marketing
- Farm guidance and extension such as seminar. Work-shop, field study and trip to the advanced area or crop-unit marketing center.
- Support for setting-up market chennel
- Planned production and shipping
- Transportation service.

##### 4.2-5 Role of Yangjukun NACF branch office

- Appropriate and timely support for primary coops

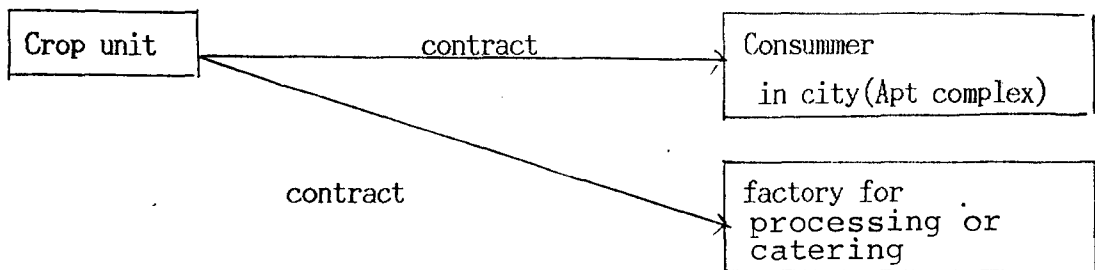
- Control and evaluation of pri-coop
- Introduction and provision of new and high technology on farm and farm management
- Distribution of information on product and marketing
- Setting-up new marketing channel with other cooperative

#### 4.3 Channalization of Marketing

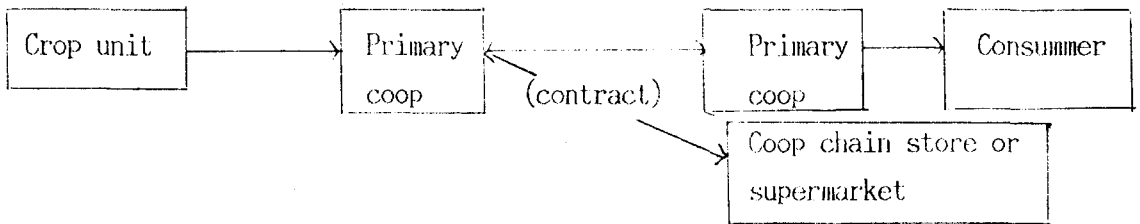
4.3-1 In project area, harvesting period of chinese cabbage is only from mid of Oct to mid of Dec. But the same time, in other area, the farmers grow not only cabbage, but also, all variaty of fresh vegetable all around year and they are not in position to supply fresh cabbge from the field to market regurally. Incase, in the project village facilities are will established for storage and plan for a definate quanty of supply during the off-farm-season. Then the cost of cold storage plus the cabbage is so high that this business will noy be profitable to the cooperative.

4.3-2 It is, therefore, necessary that the present practice of negotiating of individual farmer with the traders in pre-harvasting stage and traders will advance money to farmers and as per the contract. The farmer will look after the cabbage in the field upto harvasting time. As such area is surrounded by military establishment. Therefore, it is not also possible to construct cold-storage or any structure for such purpose under such circumstance, it is only option with the cooperative that they should adopt the following strategy of marketing in the project area.

(Model A)



(Model B)



o Fortunately this som-village had a experience of direct sale in last year 86. The figure are as shown. But problem was that quntity was limited.

	Total product	Sales the NACF <sup>(He)</sup> staffs	Army supply
Quantity	1,510 M/T	123 M/T	245 M/T
Amount	52,920,000 ₩	2,854,000₩	26,390₩
Unit price	35 ₩	23 ₩	107 ₩
Ratio	100 %	8 %	16.2 %

## 5. Impact of the project implementation

5-1 The project will be implemented by the re-organized crop-unit of som-village for the purpose of achiving following 2 main objectives.

### 5.1-1 Saving in farming input cost

The cabbage grower farmers will be united in the crop-unit for the purpose of

input supply on reasonable cost and timely so as to carry on farming operations without any difficulty and at the reasonable cost, monetary gain of the joint purchasing of agri-input will be as under ;

(Table 12) Comparison of in-put cost

(₩/10ha)

Item	Q'ty needed	Purchase from coop	Shop	Differance
	dl			
Seed	5.8	29,100	33,950	4,850
Chemical	-	9,570	10,400	830
Fertilizer	1,378 kg	26,430	26,430	-
Others	-	51,000	56,500	5,500
Total	-	116,100	127,280	11,180

#### 5.1-2 Shipping cost reduction

In addition to cheap farm input, accordingly price reduction of transportation will be achieved through jointly-shipping. At the present the transportation cost is more higher because individual farmer shipped the cabbage through private transporter. Under joint shipment operation by the crop-unit, the following transportation economy will be achieved.

(Table 13.) Transportation-charge

45 truck/₩

	Distance	Private base	5% discount	10% discount
Som vilalge-Seoul	36km	35,000	1,750	3,500
" -Uijungbu	12km	20,000	1,000	2,000
" -Dongcudhun	20km	25,000	1,250	2,500

#### 5.2 Other benefits

5.2-1 At present, the cooperative an having two trucks which are being used for the transportation of cattlefeeds and consumer goods etc. It has been calculated. But many of time they don't have full-truck-<sup>load of</sup> some day of the month they have no business to do but idle in front of the cooperative office. In order to utilize fully the trucks and employee thereof the following gain will be achieved.

name of post	No of employee		Utilization of Service		gain
	existing	creating	Existing	after implement of project	
Driver	2	-	70%	100%	30% more utilization

5.2-2 Nil cost of input transportation

In project implementation, the agri-input will be jointly purchased and shipped to the village by the crop-unit. In this regard, there will be no expenditure on transportation cost as the existing 2 trucks maintained by the cooperatives will be utilized for the purpose.

5.2-3 Increase of membership

It is likely that some new members will also join in crop-unit for obtaining shipment services which will result in increase in membership and development of cooperative activities in the area.



Acknowledgement

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Any errors remaining are the author's.



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**LIST OF ABBREVIATIONS USED:**

<b>FEIDA</b>	<b>Federal Land Development Authority</b>
<b>FEICRA:</b>	<b>Federal Land Consolidation and Reclamation Authority</b>
<b>PORIM</b>	<b>Palm Oil Research Institute of Malaysia</b>
<b>RISDA</b>	<b>Rubber Industry Small holder Development Authority</b>

(v)

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1. Summary

This paper is concern in strengthening the role of Area Farmers Organization (A.F.O) or the P.P.K that is the primary level Agriculture Cooperative Movement/ at district level, by having an intergrated cooperative system approach in developing a total of 5002 familys of oil palm smallholders or 65% of total farm familys covering around 9639.9 ha or 51.3% of the total cultivated area of smallholders in the district of Kuala Langat.

The objectives of this papers is to study the problems of the smallholders at the production and marketing level so as to find ways of increasing of their incomes by . pointing out areas in which a vertical intergration can be taken by the Agriculture Cooperative Movements i.e the A.F.O at district level by putting up a viable and bankable project proposal focussing in procuring and processing of Fresh Fruits Bunch produce by smallholders.

The independent oil palm smallholders showed an economic syrficence in producing 1.07 million tonnes of FFB between M\$100-M\$200 million and covering an area of 7.3% of the total acreage planted in Malaysia at 1984 (Malek, 1985). In the district of Kuala Langat, Selangor 65% of the farmers, i.e 5002 familys, are oil palm smallholders and producing marketable surplus of 133,695.6 tonnes of FFB and covering around 9639.9 ha or 51,3% of total Agriculture Cultivated Area.

The A. Farmers Organization (A.F.O) have a membership of 2,544 farm familys of which 70% ie 1781 smallholders, are oil palm grower which is only 35% of total oil palm smallholders in the district of Kuala Langat. The A.F.O only procure around 5500 metric tonnes of Fresh Fruit Bunch (F.F.B) of around 300 member farmers a year which is just merely of around 4% of the total marketable surplus FFB from smallholders in the district.

From a small survey done from number of 37 sample of smallholders covering 70% of the villages in the district it was found

that the smallholders have significant problems;

- i) Problem in indentifying the type of variety has they planted and planting of Dura varieties in which the source of seedling is from individuals nursery and private company other than the estates.
- ii) In marketing of FFB fruits ~~price 20%~~ of the farmers is marketing FFB through middlemen and most of the weighing is done at farm level by the middlemen.
- iii) Marketing extension and harvesting and after harvesting technology<sup>harvested</sup> since the extension of D.O.A concentrates much on production.

It also show that the distance of farms to private mills<sup>15</sup> from 1km-25km with a more of 6 km and the time taken for FFB to be collected from roadside and deliver to factory from 2 hours-72 hours with a mode of 8 hours .

There is 9 private oil palm mills in the district thus providing ready market for FFB for the middlemen. The an organised smallholders cannot do its own marketing or getting input supply due to economies of scale and thus depend very much on the middlemen. It is suspected the smallholders all facing problems due to manipulations of middlemen in weighing, giving ~~extraction~~ slightly lower extraction rate and the smallholders them self is ignorance of calculating the final price of FFB and they have no voice and cannot negotiate in ~~deter~~termining the price<sup>and</sup> extraction rate and price given from middlemen and the mill.

To give all the benefits of vertical intergration to the smallholders the A.F.O have to unite and organized the smallholders from a merely procuring 4% of the total marketable surplus FFB produce by smallholder to a target of 20 % by 1990. To help A.F.O competing with middlemen and acheiving its target, the stategovernment which administer, landschemes planting of oil

palm and D.O.A which deals in developement programme of oil palm smallholder can support of a potential market of 16,578 tonnes FFB and 13,822 tonnes FFB respectively by 1990. Thus the AFO must walk hand in hand with the D.O.A of the district to achive its target of procuriment by 1990.

To break the stronghold of middlemen on the rural oil palm smallholders high capacity mills of 10TPH-40TPH and operating centrally is not advisable since this would incur high transportation cost of FFB to smallholder area which is scattered and remote and give the advantenge to middlemen in completion of FFB from small holders and heavy competetion from private mills.

Thus in processing the A.F.O should go into the concept of putting up scattered mills with small capacity in remote areas with sufficient supply of FFB from smallholders in its vicinity. By 1990 at least one Mini Mill of capacity of 2.5TPH - 5.0TPH should be set up and feasibility study of 3TPH with of 70% rated capacity at first year, 80% rated capacity and 90% rated capacity from 3rd year onwards give an IRR rater of 21.1%, positive NPV and Benefit/Cost ratio of greater than one, which means of viable project which could be undertaken.

The mills should be set up under a subsidiary company of the A.F.O or P.P.K. Investment from oil palm smallholders should be campaigned at the extension level are share capital should be collected so that the smallholders will be comitted to the 2.5TPH-5 TPH, mini-mill project undertaken.

## 2. Background

### 2.1 Overall Situation

In 1984 Malaysia's oil palm area of 1,361,200 hectares produce 3.71 million tonnes of palm oil which constitutes 57% of the total palm oil produce in the world and 76% of total world palm oil exported and 17% of the total oils and fats traded.

51% of the total acreage planted is own by estate sector while 49% is grown by smallholders mainly organised by Government Agencies such as Felcra, Risda, State Schemes and to a small extent independent smallholders (Table 1). The independent smallholders contribution is about 7.3% in term of area planted (PORLA). The oil palm grower structure in this Country can be seen as fig. 1.

The independent smallholders produce in 1984 at an estimate 1.07 million tonnes of FFB i.e between \$100-\$200 million ringgit depending on the price of Fresh Fruit Bunch (FFB) per tonne. (Yusof Malek 1983) and Table (2). More than 75% of the independent smallholder area is now claimed by RISDA to be under its fold and the rest is under the Department of Agriculture. At present extension among smallholders in Johore, Selangor and Perak is undertaken actively by DOA and the ratio of extension worker to the smallholders is 1:800. In the state of Selangor production extension of D.O.A is being linked with marketing Function of the Area Farmers Organisation or PPK, an Institution for the farmers at the primary level, which usually deal with private mills to market the smallholders F.F.B.

In 1985, 36 percent of the total production of ceode palm oil (E.P.O) and Palm Kernel was milled from private owned mills in off-estate factories, while 25% was milled from factories of Felcra schemes and 19% was milled in estate factories (Department of Statistics, 1971-85). Felcra has currently 2 mills in operation. Majority of estate and off estate mills handled 20-30



tonnes of FFB perhour . As in the case of the independent smallholdings, their FFB is usually collected by agents of private mills who works on comission basis or sometimes collection and delivery being organized by local cooperatives of smallholders. This most of the mills in the country is own by private sector such as the estate groups and private companies and also the public sector eg. like FELDA, FELCRA which has a vertical intergration in its concepts of developements. Non of the mills yet is own by the farmers or smallholders or the producers them self, through their cooperative movement.

In the resalisation of the goals of national Agricultural Policy launched in 1985, the agricultural Cooperatives of the farmers and smallholders can make tremendous contribution. This can bee seen by the 2 strategies stressed in the NAP in acheiving its objective ;

- a) To develop efficent marketing System which would promote farmers participation in the marketing of their own crops, up grading of physical infrastructure, developement of storage and processing facilitis and product promotion at both domestic and international levels.
- b) To bring about attitunalinal changes, recepturity to innovations and active participation inthe development process of social and institutional development. Efforts will be made to develop the spirit of self help and group efforts among farmers through training and developement of effective farmers institution.

In the fifth Malaysian Plan (1986-1990), page(9) and the Outline Perspective Plan (OPP) stressed that a consequence of a great deal of goverment support schemes and incentives has been a growing tendency which odvertently led

to a prevalence of the subsidy mentality Malaysians to be over dependent on government assistance and support. This the fifth plan state the greater emphasis will be placed on developing self-reliance among the rural people and development of appropriate skills.

The Fifth Plan further states in this regard as follows (page 316);

In modernising and commercialising the smallholders sub-sector, major emphasis will be given to human resources development, particularly through training, extension and the further development of various rural institutions, including cooperatives in order to stimulate creativeness, self reliance and enterpreneurship. This there is a great potential for smallholders organize under agriculture cooperative to move in line with the above national policy mention since the cooperatives foster self-reliance and mobilize the private initiatives, resources and abilities of the farmers and other local people. The allocation for the fifth plan along with the estimated expenditure for 1981-85 (4th Malaysian Plan) are given in table (3) and in the fifth plan allocate for the programme of Agricultural credit, processing and machinery is at 743.17 million ringgit.

Thus the independent oil-palm smallholders should unite under their Agricultural cooperatives and make investment in the vertical intergration to fasten their socio-economic development. Since the smallholders contribute 7.3% of total of acreage of oil palm planted in this country which produce 1.07 million tonne of Fresh Fruit Bunch yearly, it is high time they plan to invest in milling their produce to get a better returns from their farming activities.

In the reports of Medium and Long term Industrial Plan of Malaysia (1986-1995) volume II Part 2 for the Palm Oil Products Industry, it has been concluded in one of its development

objective was to encourage the establishment of a crude palm kernel oil based processing industry in this country within period of 1985-1995.

## 2.2 Area of Project

The District of Kuala Langat which is under the state of Selangor has a potential Agriculture area of around 190,000 acres or 76923.1 Ha of which 100,000 acres or 40485.8Ha have allready been cultivated with Oil Palm, Coffee, Coconuts, Cocoa, Fruits Trees such as Durians, Rambutans and Mangosteens, Cash Crops such as Bananas, Ginger, Cassava and also Vegetables and the acreage can be refer to table (4) and oil palm formed of the total acreage of land cultivated by farmers.

44% of the total Agriculture area is of the River Alluvium Soil and 12.7% is of the marine alluvium soil, 39.6% is of the swampy peat soil and 2.4% is of the clayloam soil and the physical breakdown can be refer to table (5). 95% of the total agriculture area is peat and 5% is Gilly. This district is on the south of the state of Selangor which has a radius of 30 km and has the boundary on its west the straits of Malacca. The other Distracts which surround it is Klang and Sepang, which has also the same type of chopping patterns. The planting season is usually from middle of October to December, April-Mei and preparation of land is usually from August-October and January to February and the rainfall pattern can be referred to table (6). The average rainfall of 100 mm a month except on months of February and March is a good requirement for good production of Fresh Fruit Bunch of oil palm.

This district comprises of 30 villages with farmers population of around 7,202 farm familys. The total population of the district is around 103,894 people and around 50% of the population is related with agriculture. 95% of the

whole district is accessible with tar roads in the villages and laterite roads in the farming area. The water supply cover 95% the whole district and the draingage system cover 100% of the total area of agriculture cultivated.

The main crops of the farmers is oil palm which covers acreage of 9639.9 ha and 5002 smallholders family with an average of 2 ha per family which is 65% of the total farm family in the District. The yearly break down of oil palm planted can be refer to table (7). 70% of the farmers dealing with oil palm, treat it as a secondary occupation while the main occupation could be growing cash crop, vegetables, cultivating mushrooms, Honeybeegnor working in private sector or public sector.

The Farmers in the district is being organized under the area Farmers Organization (A.F.O) or the P.P.K. of Kuala Langat which is the primary cooperative movement. Under the P.P.K there is 30 small agriculture units formed at the villages level so as to mobilise farmers participation to the movement. The S.A.U is an informal groups but its formation is being recognised in the bylaws of the PPK. Further details of the P.P.K can be seen in table (8) and

40 % of its business profit comes from marketing of oil palm Fresh Fruit Bunch from its members (Table 9) and the estimed supply of FFB can be refer to table (10). The P.P.K or Area Farmers Organization only procure the Fresh Fruit Bunch (F.F.B) of Oil Palm from around 300 members while its membership cover around 2,544 family which is around 35.3% of the total farm familys in the district. The P.P.K organised collection and delivery from members farmers and supply it to the private mills for some comission between \$5.00 - \$10.00 perton FFB while the other farmers will deal

through middlemen to supply FFB to the mills. The price of the per-ton FFB will be determined by the mills and usually at the end the farmers have to bear any deductions made by the mills to the middlemen or P.P.K due to quality of fruits and inaccuracy of weighing and etc. At present there is around 9 palm oil mills in the district which is owned by the estate sector, private sector and public sector, details of the mills can be referred to table (11).

Since the major crop of the farmers in the district is oil palm and the major business of AFO or PPK is with marketing of FFB thus the anchor activity of the farmers members is oil palm cultivation and the primary activity of PPK should be concentrated in marketing and processing of FFB.

### 2.3 Problems Faced by The Farmers

A) The problems faced by the oil palm smallholders related to production structure are as follows:

#### a) Size of Production Units

The average land holdings of smallholders is around 2 hectares and there is also smallholders having farms around 0.8 ha and below 2 ha., thus individually it is uneconomic for them to organize supply of inputs and marketing of outputs and it is not economic also for the smallholders to work full time on their oil palm smallholding. The average man-days given by smallholders in the district to work on 2 ha. of land is around 5 to 8 days a month, thus they can concentrate on other income generating activities which can be a primary or secondary occupation. A smallholder can in fact work on 12 - 15 acres or 4.9 - 6.1 ha full time on its oil palm smallholding.

bi Organization and Management

Since the oil palm crop, serve as a secondary occupation to the smallholders since they gave around 16.7% to 26.7% of there time monthly, thus they are not wholly comitted to the crop. Thus this independent smallholders' weakly felt the need to unite and therefore they cannot pool their resources to buy agricultural inputs nor sell their outputs. They are satisfied with services from middlemen who come over to their holdings to buy the FFB and supply them with inputs. Independent smallholders are getting lower price then goverment organised smallholders (eg) Felcra and Felcra, which has a concept of vertical intergration inthe developement of the land schemes. For instance, Felcra settlers in Ketengah obtain slightly better prices since Felcra has a share in the Ketengah palm oil mills which buys their FFB, thus the settlers can negotiate a better FFB price from mill.

If the smallholders can unite strongly under the P.P.K or A.F.O of the district, purchasing of planting materials, fertiliser, other input and sale of FFB and negotiation of prices can be done in more economical and orderly manner.

c) Extension

In this district, extension of oil palm technology to smallholders is being under taken by Department of Agriculture (D.O.A) which has an extension agent ratio 1:800 smallholder family. The area farmers organization (A.F.O) or P.P.K does not provide extension agent on production since all the staff is allocated to the activity relating in business only. The extension workers also covers other crop other then oil palm thus the extension effort of the D.O.A is further shared with other crops.

From a small survey of 37 samples of smallholders in the district (Table 12), the main factors in influencing good yields are types of seedlings and types of soil. When the smallholders first started planting the oil palms in 1970s the seedling are being supply by unprofessional individual person or goverment contrats, in which the genuity of the good variety of Tenera seedlings was not check, thus farmers suffer low production of F.F.B due to satisfactory type of seedlings. In terms of soil, the area of the district is a potential acid sulphate area, thñs water control in the draingage system is an important factor to maintain a good F.F.B production.

The extension on technology of harvesting and after harvest and marketing extension is lacking to smallholders, this also seen in the survey done, thus the smallholders is ~~ignofance~~ on the effect of Young Fruits giving a lower oil extraction rate, longer period of collection of F.F.B from roadside by middlemen would increase the content of Free Fatty Acids (F.F.A) which will then result in poor quality of fruits sent to the mills.

The productivity of the smallholders is usually around 20% lower then the production of estate production due to their small landholding, satisfactory farm management system and economies of scale. The production detail according to Age of oil palm of independent smallholders can be seen in table (13)

B) While problems not directly related to production of the smallholder are ;

a) Technical

From result of small survey done, it was found that Smallholders in this district depend very muchly on the

subsidize price of fertilizer given by the state government through Department of Agriculture. The state government has recently stop the subsidy in the fifth Malaysian plan which results farmers in attitude of fertilizing when the price of FFB is good and sometime rate of application is only 50% of the requirement of the palm. Thus the attitude influence low yield, (C. Chung, 1979). Since the size of smallholdings is small and period of working days on 2 ha of smallholdings is around 5 - 8 days thus comittment on good management is low which result in agronomic husbandary practices are not strictly followed.

In selling of F.F.B, the grading is based on visual test and thus it is not satisfactory as it is subjective. Grading will only be done by the mills and grades of F.F.B may not be given similar extraction rates by mills and depending on market forces mills may pay a higher or lower price to sellers of F.F.B. The sellers, usually the middlemen is just a comission agent for the mills, thus usually will accept any value given by the mill, while the independent smallholders depend on the middlemen the determination of extraction rate.

b) Replanting Cess

The government organised smallholders schemes in Felda and Felcra replanting cess at a state of \$98.00 per ha is collected per annum commencing from first year of harvesting. The current cost of replanting is about (M/\$4,300 per ha it is difficult f smallholders to replant without assistance. Thus the independent smallholders must be organized in the district under the PPK so that replanting cess can be collected. According to Malek (1985), the main problem of independent smallholder is that there is as yet no legal body to collect and administer replanting cess.



c) Marketing of Oil Palm FFB (Fresh Fruit Bunch)

Oil Palm F.F.B of smallholders are harvested 2 times per month in the district. The harvested fruit will be accumulated at the collection point on the road side which will then be collected by lorry of the middlemen which are sometimes the agent of the mills working on commission basis. In this district the commission paid by private factory is from \$5.00 to \$14.00 Malaysian Ringgit per ton FFB to the middlemen. The A.F.O or P.P.K collect and deliver fruits around 500 tons of F.F.B/month from 300 of its members while the rest of the smallholders deals with the middlemen.

The distance of smallholdings from mills varies from 3 km to 26 km so there is around 9 mills. The cost of transportation varies from \$6/ton to \$15/ton depending on farm to the mills. The lower price of FFB/ton experienced by farmers are \$50 per tonne FFB in the year 1986 and the lowest price of C.P.O at world market in 1986 is \$446 per tonne of C.P.O. The time taken before F.F.B collected and delivered to factory from smallholders is around 8 hours - 48 hours and sometimes 72 hours in certain very remote areas in this district.

By marketing F.F.B through middlemen the smallholders are bound to face big problems through the manipulations of the part of middlemen. The middlemen are believed to retain a rather higher portion of the mill price that would be considered a fair return to their effort. The smallholders are usually ignorant of deriving the price of the F.F.B at farm gate. The final price will be given by the middlemen and the smallholders do not require or does not have any say in the price given to them. Other than that the middlemen will try to gain more profit in cheating during weighing of F.F.B at the farm level and giving a slightly lower extraction rate

to the smallholders than what is given by the mill. Independent smallholders whom are not organized cannot voice out their dissatisfaction since they are very much in debt to the middlemen through the credit of inputs given and also receiving advance cash against future harvests.

The middlemen really does not have intention to give welfare services or having sympathetic feeling to wards <sup>farmers</sup> but his plan to exploit maximum profits in future business dealing with the farmers. Thus there is no denying that independent smallholders are getting a lower price than government organised smallholders schemes for instance Felcra settlers in Ketengah not only can negotiate the price of F.F.B with Ketengah palm oil mill but also would get the concession the factory gives to the middlemen for every ton of FFB supplied. Middlemen are also not often attracted to remote areas for collection, unless there is good profits to be made for such venture. During the peak seasons i.e from the month of June-September, the mills will have more than enough supply, the price of FFB will drop to an unreasonably low level that would leave little financial benefits to smallholders. Farmers in remote areas will only be contacted or service by middlemen of

**during the low sessions i.e. from the month of February - June when price of FFB will rise up. The production cycle of oil palm month wise is indicated in annexes 14 (i) and 14 (ii).**

The rapid changes or drop of price of F.F.B from month to month pose a unsatisfied mood and situation to the smallholders as example in 1986 the lowest price experienced by smallholders is at \$50/tonne FFB and the highest price of FFB per tonne was \$115/tonne. Usually the smallholders <sup>know</sup> does not the world commodity market and also they depend on middlemen to know the price of FFB/ton given by the mill and through their ignorance of calculating the price of FFB they finally end up at the losing end. Since the mill is responsible to publish the price of FFB per tonne at monthly period, usually when price

14) 66) Production Cycle - of total FFB supplied to factory monthwise.

Year	FFB SUPPLIED FOR PROCESSING (Monthwise)													TOTAL (tonnes)
	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	NOV.	DIS.	JAN.		
1990	262.5 tonnes	262.5 tonnes	262.5 tonnes	262.5 tonnes	787.5 tonnes	787.5 tonnes	787.5 tonnes	787.5 tonnes	525 tonnes	525 tonnes	525 tonnes	525 tonnes	6300 tonnes	
1991	420 tonnes	420 tonnes	420 tonnes	420 tonnes	1260 tonnes	1260 tonnes	1260 tonnes	1260 tonnes	840 tonnes	840 tonnes	840 tonnes	840 tonnes	10,080 tonnes	
1992	480 tonnes	480 tonnes	480 tonnes	480 tonnes	1440 tonnes	1440 tonnes	1440 tonnes	1440 tonnes	960 tonnes	960 tonnes	960 tonnes	960 tonnes	11,520 tonnes	
<del>1992</del> 1993	540 tonnes	540 tonnes	540 tonnes	540 tonnes	1620 tonnes	1620 tonnes	1620 tonnes	1620 tonnes	1080 tonnes	1080 tonnes	1080 tonnes	1080 tonnes	12,960 tonnes	
<del>1993</del> 1994	540 tonnes	540 tonnes	540 tonnes	540 tonnes	1620 tonnes	1620 tonnes	1620 tonnes	1620 tonnes	1080 tonnes	1080 tonnes	1080 tonnes	1080 tonnes	12,960 tonnes	
1995	540 tonnes	540 tonnes	540 tonnes	540 tonnes	1620 tonnes	1620 tonnes	1620 tonnes	1620 tonnes	1080 tonnes	1080 tonnes	1080 tonnes	1080 tonnes	12,960 tonnes	

64) PRODUCTION CYCLE. - monthwise per hectare of oil palm trees.

AGE OF PALMS	PRODUCTION CYCLES MONTHWISE / Ha.												TOTAL t (tons/ha/yr)
	Low Season				Peak Season				medium season				
	Feb	March	April	May	June	July	Augt.	Sept.	Oct.	Nov.	Dis.	Jan.	
5-10 years	0.33 tonnes	0.33 tonnes	0.33 tonnes	0.33 tonnes	0.99 tonnes	0.99 tonnes	0.99 tonnes	0.99 tonnes	0.66 tonnes	0.66 tonnes	0.66 tonnes	0.66 tonnes	8 tonnes
5-10 years	0.63 tonnes	0.63 tonnes	0.63 tonnes	0.63 tonnes	1.37 tonnes	1.59 tonnes	1.59 tonnes	1.59 tonnes	1.26 tonnes	1.26 tonnes	1.26 tonnes	1.26 tonnes	15.2 tonnes
15 years	0.7 tonnes	0.7 tonnes	0.7 tonnes	0.7 tonnes	2.1 tonnes	2.1 tonnes	2.1 tonnes	2.1 tonnes	1.4 tonnes	1.4 tonnes	1.4 tonnes	1.4 tonnes	16.8 tonnes
6-20 years	0.63 tonnes	0.63 tonnes	0.63 tonnes	0.63 tonnes	1.59 tonnes	1.59 tonnes	1.59 tonnes	1.59 tonnes	1.26 tonnes	1.26 tonnes	1.26 tonnes	1.26 tonnes	15.2 tonnes
Average monthly	0.51 tonnes	0.57 tonnes	0.57 tonnes	0.57 tonnes	1.7 tonnes	1.7 tonnes	1.7 tonnes	1.7 tonnes	1.14 tonnes	1.14 tonnes	1.14 tonnes	1.16 tonnes	

fall down, the mill is very efficient to ensure that the middlemen and smallholders is aware of it but when the price shoot up the price will be informed as slow as possible, so that maximum profit can be exploited. The FFB price at farm gate are determined by PORLA method but then only at times PORLA pricing guidance is followed (PORLA 1982). The price is also obtained from the Rough and Ready method i.e multiplying last month CPO price per tonne by 16%.

In the calculation of FFB at farm gate according to PORLA is;

$$P_m = \frac{(p_o - D_1) \text{ ERO}}{100} + \frac{(P_k - D_2) \text{ ERC} - m}{100}$$

- P<sub>m</sub> - Price per tonne at FFB at mill gate
- P<sub>o</sub> - Price per tonne of CPO delivered (PORLA)
- ERO - Extraction rate for CPO
- P<sub>k</sub> - Price per tonne of PK (PORLA)
- M - milling/processing charges,  
inclusive of profit margin
- D<sub>1</sub> - Insurance, selling commission PORLA Cess  
of \$1.75, PORIM Cess of \$4.00 per tonne  
(CPO and PK)
- D<sub>2</sub> - Selling commission and other (PK)

Thus if the PORLA method is followed, the factor D<sub>1</sub> and D<sub>2</sub> does not benefit the independent smallholders. Also at the private will sometimes the ERK of Palm Kernel will not be taken into account when price given to the independent smallholders which the mill consider the business transaction is just buying Fresh Fruit Bunch from them.

The simulated price of FFB at mill gate by PORLA can be refer to table (14) with additional assumptions that D<sub>1</sub> \$40,000 and D<sub>2</sub> = \$10.00.

During buying of FFB from smallholders, middlemen will give payment on the farm at 80% of the price per tonne of FFB of previous month and after the current price is known from the mill, addition or subtraction to the payment of the next dealing of buying of FFB from the smallholdings will be done.

#### 2.4 Need and Justification for the Project

With reference to table (7) there is around 5002 Oil Palm Smallholders which form 68% of the total farm families in the district of Kuala Langat with on average holdings of around 1.9 ha per family. Reports from a survey by PORLA (1981) majority smallholders with an average of 2.05 ha farm 66.88 percent of the total 468 smallholders surveyed. It was reported from Annual Report (1986) of the Department of Agriculture of Selangor state the production of independent oil palm smallholders of various age group of the this district is as below ;

<u>Age</u>	<u>Smallholders Yield/yr/ha</u>	<u>Estate Yield/ Yr/ha</u>
3-5 years	8 tonne FFB	11 tonne FFB
6-10 years	15.2 tonne FFB	19 tonnes FFB
11-15 years	16.8 tonne FFB	21 tonnes FFB
16-20 years	15.2 tonnes FFB	19 tonnes FFB

From table (15) and table (16) we can see that the total marketable surplus of FFB per tonne year of smallholders is 133,695 tonnes which has the potential to produce ~~25387~~ <sup>25387</sup> tonne of crude palm oil and ~~5434~~ <sup>5434</sup> tonne of palm kernel oil.

Apart from that the state government is opening up newland schemes in this district which will be given to the landless and the uneconomic size of landholders to be developed with oil palm through the P.P.K or Area Farmers Organization at an acreage of around 2,500 ha from 1987-1990.

Other than that the Department of Agriculture in this district have a plan to develop new plantings of oil palm for smallholders at an acreage of 850 hectares between the year 1987-1990 in which production extension of the department has a linkage with the marketing function of A.F.O or P.P.K. Thus by 1990 there is around 12,990 hectares of oil palm in the district of Kuala Langat.

The disorganized smallholders are usually manipulated by the middlemen which cheats, them at weighing, in determining extraction rate of smallholders and the sales of palm kernel is usually not included in smallholders price. Furthermore the smallholders them self are ignorance of calculating the price of F.F.B per tonne at farm gate level and the final price is usually given by middlemen to smallholders which is usually slightly lower than what should be given to them. Replanting cess which is charged before a tonne FFB price is given out does not benefit the independent smallholders since it does not have a legal authority yet to collect and administer for them. Prices of fertilizers and chemicals supplied by middlemen can be purchase at a lower cost if they buy in bulk through Cooperative. The supply of good planting materials is a need by smallholder for high production of F.F.B. Planting materials supplied by individuals or government contract cannot be assured to be 100% pure varieties of tenera thus if a cooperative can put up a nursery for the smallholders, pure tenera seedlings and <sup>at</sup> lower cost price can be given to them. Currently extension on production is being done by D.O.A but then their extension agents is also responsible for other crops, thus their effort could not concentrate wholly to the smallholders.

The Area Farmers Organization have around 2,544 members in which 1781 members are oil palm smallholders and only 300 farmers members are selling its FFB through the Cooperatives. The AFO supply the private mills at around 400-

500 tonne of FFB per month and during the whole year it procure around 5000 tonne of FFB from its members. The Possibility to procure more from smallholders is high since there is around 5022 oil palm smallholders covering an area of 9639.9 ha with a production of 133,695 tonnes of FFB/year. The membership of the Cooperative is only around 36% of the total farm family in the district.

Around 900 ha of district land schemes which involves of 899 smallholders have not been issued the grants by the state government. To increase the participation of members, conditions can be imposed to the smallholders that all the FFB produce must be sold to the A.F.O before the grant can be given to them and in this way the procurement of FFB can be increased to another 5848.7 tonnes of FFB/years. Between 1987-1990 another 2439 ha of new land will be open under the state schemes and planted with oil palm under the Management of Area Farmers Organization while the District Agriculture Department plan to plant new planting of oil palm in smallholders area at around 813 ha. from 1987-1990, in which linkage is being plan with the marketing activities of the A.F.O or P.P.K. The department also plan to have a development programme to low yielding, matured palms area of smallholders at an acreage of 813 hectares from 1987-1990 with an objective to increase production and promote group marketing through the P.P.K or A.F.O.

Presently the A.F.O or P.P.K has been given around 81.3 hectare by state government to be developed with oil palm and the site is around 1.6 k.m from the Kuala Langkat - Sepang Highway.

It has been seen that the A.F.O lacking vertical integration in its approach to develop the farmers in the district. Its activities is much on getting profit through becoming a commission agent in supply of inputs and marketing of outputs. So as to increase member participation the AFO



or P.P.K should go more into marketing and processing activities which badly needed by farmers. Only 66% of the total farmers with oil palm and 70 % members of A.F.O or P.P.K have oil palm crop and oil palm cover 51% of the total area cultivated under agriculture by smallholders in the district and with great potential of 133695 tonnes of F.F.D produces by smallholders, the A.F.O should establish a mills of its own to fasten the socio-economic development of members, increase member participation and to give the farmers a fairer trade in the oil palm business.

### 3. Project

#### 3.1 Objectives

To develop and strengthened the Area Farmers Organization of the district of Kuala Langat through an itergrated cooperatives systems or total system approach by giving greater concentration on the anchor comodity that is oil palm through 2 primary activities that is procuring and marketing FFB of oil palm smallholders and processing the FFB procured to crude palm oil by establishing the e own mill so that the farmers can get remunerative price to their produce and thus increase in their income. Secondary activities should be taken is the marketing <sup>of C.P.O</sup> Extension and input supply by the movement so as to support the primary activities.

#### 3.2 Area of Operation

The area of operation is through out the district and if can be targeted to the volume of FFB that is possible for the A.F.O to procure so that it is viable to start a mill, from table (4) there is 9 mills in this district which belong to the estate, private company and Public Sector. 3 oil mills at a total capacity of 72 tonne ffb/hr depend solely on their plantation. 5 oil mills at total capacity of 76 tonnes ffb/hr depend on their plantations and supply from middlemen. One mill at a total capacity of 20 tonnes ffb/hr depend solely from middlemen of this District and District of Sepang.

While in table ( 9 ), the AFO only procured around 5500 tonne ffb/year from its members. Middlemen doing marketing of FFB of smallholders does not face any problems since there is ready market at the local mills. This for the A.F.O to venture into processing of F.F.B, it has to come out with a marketing plan so that it can procure enough FFB <sup>to</sup> start a mill so that value adding activities can be done to the FFB of farmers members.

The current procurement of the A.F.O is around 5510 tonnes in 1986 (Table 9) involving around 300 farmers members. It is also possible to increase procurement of around 10,200 tonne of FFB in 1988 involving 600 farmers members which cover 600 hectares from government land schemes with cooperation of state government imposing condition that the landholders must sell its FFB through AFO. There is still around 3294 smallholders from the insitu developement area covering around 7228.2 ha and 166 smalholders from goverment landshemes of 404.85 ha in which both the area is potential of producing another 122, 274.4 tonne of F.F.B a year.

At present AFO registered members is 2844 farm family which cover only 38% of total farm family in the district. 70% of its members have oil palm smallholdings and merely 300 members have their FFB marketed through AFO.

For A.F.O to establish a mill it should procure or control at least 31,500 tonne FFB/year which involve around 1020 oil palm smallholders with area coverage of 2100 hectares, with an average production of 15 tons/ha/yr. Thus the A.F.O have a target to increase it procurement activities of 5,500 tonne ie only 4.1% of total marketable surplus of FFB in the district to a minimum level of at least 31,500 tonne of FFB or 24% of the total marketable surplus of FFB so as to run at least 10 ton/hr capacity mill by the sixth Malaysian Plan ie between 1991-1995. The target of increasing the procurement from 4.1% to 30% of total markrtable surplus is considered due to the possibility competetion put up by the middlemen and the private mills. The time period of 4 years i.e between 1987-1990 is to acheive the procurement target and to start a mill, ~~is needed since~~ Procuring plans, member education programe have to be implemented so as to make the members farmers agree and comitted to the milling project of F.F.B especially in investing in the palm oil mill projects.

### 3.3 Projects Component

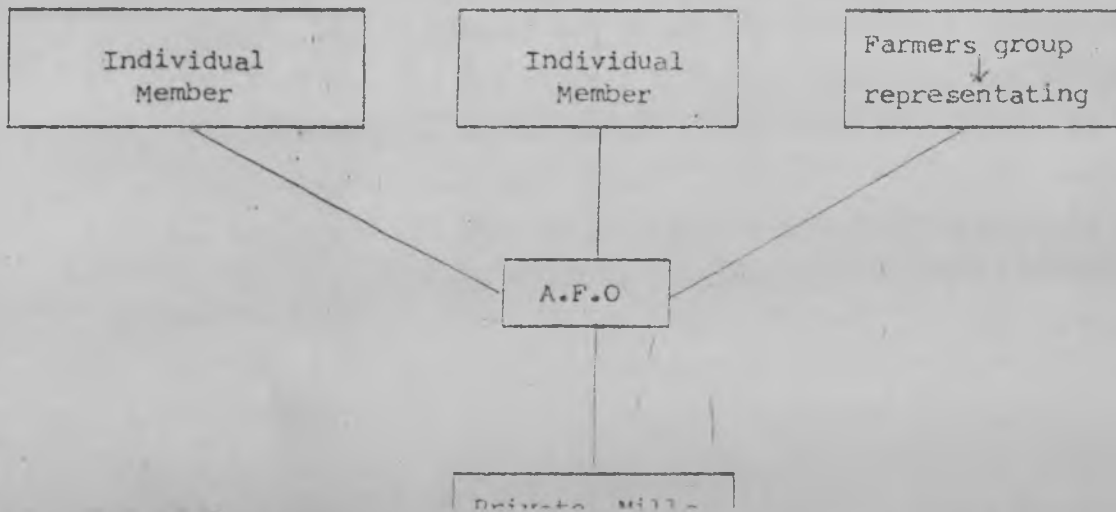
To achieve the objectives stated thus the area farmers organisation have to perform functions pertaining to oil palm commodity such as :-

- a) Procurement of F.F.B and marketing for members farmers
- b) Processing
- c) Marketing of C.P.O and Palm Kernel
- d) Extension on production and marketing of oil palm
- e) By Product Processing
- f) Input supply

#### 3.31 Procurement and Marketing of FFB

This topic has been discuss to quite extent in 2 thus can be refer for further understanding of the function. The system of procurement of the AFO is explain in the figure as below ;

Steps of procurement of oil palm of A.F.O from Farmers Members



The FFB procured from farmers members is then directly deliver to the mills. Thus the individual farmers after harvesting will accumulate the F.F.B on the roadside which will then collected by A.F.O lorries and this procedure also is the same for the farmers group.

The weighing of the FFB harvest will be done at farm level by A.F.O staff with the <sup>presence</sup> of the individual farmers <sup>or representative</sup> group approach. Since the price of FFB is determine by the mill at the middle of the month thus A.F.O advance cash payment of 80% of its harvest according to previous month price while the balance will be pay when the price of FFB for the month have been announce by the mill during the coming month of buying of the FFB haverst.

The A.F.O have 3 lorries with a total capacity of 24 tons/10 lorries, a day to transpot the FFB to the mills. The cost of transportation and inclusive of the service for weighing is from \$10 - \$15/tonne FFB.

The individuals dealing with the A.F.O have to follow the harvesting calender determined by A.F.O of prior discussion with the farmers, so that collection and delevery of fruits can be done efficiently.

Thus in this issues there is no need to put up any procurement centre, the individual farmers have to bring their harvest to the roadside which is accessible for the AFO lorry to collect the FFB. The road infrastructure this district is very good.

No warehousing is needed by the APO since the FFB is required to be delivered to the mills within 48 hours so that higher extraction rate can be given by mills.

There is so many mills in the district thus there is a competition for FFB and thus there is ready market in the district.

### 3.32 Processing

This topic have been also discussed in to some extent. As we can see that most of the palm oil mills belong to estate organisation and private companies are as in table (ii), ~~1-1-1984~~. The types of mills is as follow :

Type	Capacity	Tonnd/FFB needed at 300 working days with 100% rated capacity per two shifts
A	5-25TPH	12,000 - 24,000
B	10 TPH-20TPH	48,000 - 96,000
C	20 TPH-40TPH	96,000 - 192,000
D	30 TPH-60TPH	194,000 - 286,000

Usually the most commonly used is from 10 TPH - 40 TPH. On determining the size of oil palm mills two factor important for consideration.

- i) The total FFB can be Procure or supply.
- ii) The coverage of Area of Plantation or smallholders.
- iii) The availability of s fficient good amount of water.

Thus the time taken to deliver the FFB to the mills and the distance of farms to the mill will influence the extraction rate and transportation cost which finally will also influence the price of the FFB.

The palm oil and kernel extracted from the FFB from the palm oil extraction mill are the final commodities traded locally and overseas. Usually to produce 1 tonne of FFB C.P.O and 26 tonnes of palm kernel it needs to be processed 5 tonnes of FFB. The processing cost is estimated between \$20 - \$40.

At the price of 1 tonne of FFB = \$112  
1 tonne of CPO = \$700  
1 tonne of Palm = \$350  
Kernel

The profit margin of the smallholders are,

a) Selling FFB

Selling price 1 tonne of FFB = 112/tonne FFB  
Production cost 1 tonne FFB = 87/tonne FFB  

---

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income = 25/tonne FFB

b) If the FFB is processed in mill

the added value ;

i) Selling price of 1 tonne = \$700  
C.P.O  
Cost Price = \$150 (Processing cost)  
= \$560 (cost 5 tonne FFB)  
= \$ 10.00

ii) Selling price of Palm Kernel = \$ 350  
Cost price = \$ -  

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\$ 350

But in production of 1 tonne of CPO only

...26 tonne of Palm Kernel produced

∴ the value of palm kernel = \$ 91.00

∴ profit margin from processing of

5 tonnes of FFB = \$91.00 + (-\$10.00)  
= \$81.00

∴ \$81.00 is the profit of processing of 5 tonnes FFB

∴ Processing of 1 tonnes of FFB will give a profit of \$16.2

c) Thus added value to the profit of smallholders

i) processing 1 ton of FFB	= \$16.2
ii) Selling 1 ton of FFB	= \$25
total profit	= <u>\$41.2</u>

∴ Thus through processing the profit margin for for smallholders having 2 ha of land with oil palm age of 11 - 15 years can be increased from \$840 per years to \$1384.32 per year. The smallholder working 60 to 96 Mondays /year on the oil palm smallholding.

After the Palm Oil Milling activities the main product generated by the oil palm industry as in figure ( 2 )

### 3.33 Marketing of C.P.O and Palm Kernel

The sales of crude palm oil and palm kernel from the mills does not pose a problem. For C.P.O there is ready market from local refinery and in 1984 around 97% of C.P.O is refined and only around 5% palm kernel is will in this country. Palm kernel is also exported overseas in which highly valued for further processing of palm kernel oil.



cattle feed sales can be organised through any of the quasi government bodies, such as Felda and Felcra or trading departments in Sime Darby, Guthrie, Harissons and Barlow which are long established trading houses for C.P.O and Palm Kernel.

### 3.34 Extension of Production and Marketing of oil palm

At present extension on production are being done by extension agents of D.O.A. The linkage with the A.F.O at the marketing of FFB in group of small-holders and supply of inputs and credits. The objective of development of D.O.A for the farmers is in line with the A.F.O. At current situation since the AFO is under development stage the work of extension towards farmers development can be shared with D.O.A. But when the A.F.O have enough funds farm-guidance official can be appointed to give services on farm-management and marketing extension.

At present the D.O.A is organizing farmers informal group for promoting group cooperation in agricultural farm activities in the area under the S.A.U. The extension agents in the district felt that cooperative education should be followed up to the farmers informal group that has been developed so as to hasten socio-economic development farmers in a group.

### 3.35 By Product Utilization

~~From the above, it can be seen that processing of oil palm products C.P.O and palm kernel which easily marketable.~~

C.P.O can be further processed or refined to ;

- i) Manufacture fat products
- ii) Oleo Chemicals
- iii) Speciality fats

While Palm Kernel can be further crush to give Palm Kernel cake and crude Palm Kernel Oil. Thus Palm Kernel cake can be use after treating for cattle feed and in popular demand in Europe.

Palm Kernel Oil is competing with coconut oil at world market and it can be further refine to produce marketable products. Palm Oil Utilization Chart can be refer to *figure ( 3 )*.

### 3.36 Input Supply

At currently is doing this activities in supplying agricultural inputs to smallholders. Thus to procure more F.F.B from farmers the A.F.O should give inputs through credit basis and linking its payment through marketing of F.F.B.

4. Details Of Operations

4.1 Procurement And Marketing FFB

To some extent this section have been discussed in 3.3.1. From fable below the projected procurement of FFB/ ton/yr of AFO from 1987 - 1995, 1<sup>st</sup> from 5500 tonne to 91,754 tonnes.

Year	FFB Supply From Present Client	FFB Supply From Landschemes	FFB Supply From New Client Of AFO	FFB Supply From Client Of FOA Development Programme.	
				New Planting	Matured Areas
1987	5,500				2,846
1988	8,348	5,000			2,846
1989	16,194	7,700		1,219	2,846
1990	26,959	4,878		1,219	2,846
1991	35,902	4,878		2,642	2,846
1992	46,268	7,926	5,000	2,642	2,846
1993	64,682	3,048	5,000	2,642	2,846
1994	78,218	3,048	5,000	2,642	2,846
1995	91,754		5,000	2,642	2,846

With cooperation of state government, landschemes producing FFB should be condition to market FFB through AFO and this can increase volume of procurement to:-

<u>Year</u>	<u>Tonne Of FFB Supply To AFO Yearly</u>
1988	10,200
1989	11,700
1990	16,578
1991	21,456
1992	29,382
1993	32,430
1994	35,478
1995	35,478

The AFO has a very close relation with the D.O.A in extension towards oil palms small holders. Through the development programme of new planting and improving low yield matured areas, the procurement programme of FFB from the small holders involved can be linked with the marketing unit of the AFO.

The projected increase in procurement through the co-operation of D.O.A is:-

<u>Year</u>	<u>Supply Of FFB/Tonne/Year</u>
1987	2,846
1988	5,692
1989	9,757
1990	13,822
1991	19,310
1992	24,798
1993	30,286
1994	35,774
1995	41,262

Thus by 1995, 41,262 tonnes FFB can be produced by AFO. While AFO have target to increase no. of new clients through the farm leaders in the movement and staff from marketing unit at 27,000 tonne FFB per year by 1995.

Thus to ensure that AFO can manage the new volume of business that is potential in coming years, more staff and working capital needed to move the business. Transport can be hire or new ones can be bought for FFB transportation. Supply of input in credit terms are to be linked with marketing of FFB.

#### 4.2 Processing

##### i) Capacity Of Mills

By the end of 1990 about 35,902 tonnes of FFB can be produced by members. From 1990 - 1995, increase in volume projected is around 15,000 tonnes FFB per year. By the year 1991, the AFO can already establish oil palm mills for the benefit of members farmers.

The capacity of mills that is appropriate could be:-

a) 10 ton/hr - 20 ton/hr which needs FFB between 48,000 tonnes - 96,000 tonnes to run the mills at 2 shifts and 300 working days and a fixed and development cost around 8.5 million viggd and requier an acreage of 3.1 hectare.

b) 2.5 ton/hr - 5 ton/hr which needs FFB between 12,000 tonnes - 24,000 tonnes to run the mills at 2 shifts and 300 working days and a fixed and development cost around 1.36 million requiering a acreage of around 0.7 hectare.

The aim of putting up of an oil palm mill is to ensure small holders fruit harvested should arrive for processing between 48 hours, the earlier the better and the transportation cost to be reduced as low as possible and thus prices for the small holders can be increased.

The supply of fruits FFB from small holders to AFO come from scattered area in the districts thus if a 10 ton/hr capacity mill is to be build its location should be centralised and some farmers from remote areas would face problem of transportation.

Thus a 2.5 ton/hr - 5.0 ton/hr is much preferred because the cost is much lower and it require a much lower acreage of factory site and it can be established also at the village lower. Furthermore it require a supply of 12,000 FFB - 24,000 FFB at 100% rated capacity per year.

Thus in 1991, the AFO procured around 35,902 tonnes from akd once the district and a yearly increase around 15,000 tonne FFB until 1995. Thus in 1990, 1 or 2 mill of 2.5 ton/hr - 5.0 ton/hr can be build in area which supply the most FFB to the AFO and more of this kind of mill can be established according to the situable situation.

Thus the establishment of this Mini-Mills in some areas allready cultivated with oil palm will go along breaking the strong hold that middleman have on rural farmers. There is also a possibility to group the small agriculture units to farm one mini-mill to service their members where necessary.

ii) Types Of Mini-Mills

There are four type available:-

01) Village Palm Oil Mill (Holland/Malaysia)

- Capacity 1 ton/ftb/hr
- Cost - \$750,000

02) 'De Wecker' Mini Mill (Belgium)

- Capacity 1.5 tons. ftb/hours - 3.0 tons ftb/hr
- Cost - 1.7 Million (Ringgit)

03) Stork Junior Palm Oil Mill (Stork - Holland)

- Capacity 3.0 tons ftb/hr.
- Cost - 1.2 million

04) 'CHD' Mini Mill

- Locally designed and fabricated in Kuala Lumpur.
- 95% local content.
- Capacity - 2.5 tons FFB/hr and 2 sets of presses and digesters will give up to 5.0 tons FFB/hr capacity.
- Total cost - 1.2 million (ringgit).

Thus the 'CHD' type of mini-mills is recommended for the small holders through the AFO.

iii) Mill Management

The mill will be under the super vision of the general manager of AFO. The mill will have a management staff as in table (17). The management of the mill will be engineered by a supervisor, 7 general workers in the processing section. The supervisor can have only qualifications of higher school Certificate and few weeks of basic training oil mill. Regular visits by an experienced palm processing supervisor will help to ensure smooth running of the factory.

4.3 Marketing Of C.P.O And Palm Kernel

The average price is around <sup>MS</sup>850 per tone for palm oil and 550 per tone for palm kernel. It is expected that the price of palm oil will be maintained at a level of <sup>MS</sup>800 per tone and <sup>MS</sup>400 palm kernel per tone for the coming years. The production cost of producing 1 tone CPO is around \$650 (Malaysian dollars per tone of CPO). Thus oil palm milling is still a profitable activity to the AFO.

97% of CPO produced in this country is refine locally and there is many refineries in Malaysia, thus there is ready market for the CPO production. The palm kernel has a good demand overseas and it can expected. ~~The trading houses of~~ Establish trading department of Sime Darby and Guthrie can help in the marketing of palm kernel.

#### 4.4 Extension

Until now the department of agriculture has a full strength staff of extension in the district. The AFO is cooperating with DOA in extension to member and member oil palm small holders. The DOA will develop in-formal farmers group so as to cultivate group action. Development programme on small holders will be link with AFO for marketing of FFB to the mills.

#### 4.5 By Product Utilization

As in figure (2) and figure (3) it is noticed that palm kernel can be further processed into palm kernel oil and palm kernel meal. Thus by 1995, around <sup>1-4</sup> mini-mill can be developed in the district.

The production of palm kernel can be accumulated by the AFO and a palm kernel crushing plant can be established for the district to produce palm kernel oil and palm kernel cake for cattle feed. Both the products have good market demand.

The other products such as crude palm oil and palm kernel oil can be further refine to become fat products which is highly demanded by the world. To have a palm oil refinery is a project should be looked into by NAFAS, the Apex of the AFO at national level.

The fruits residues from the oil palm mills is under through investigation for by product <sup>recovery</sup> ~~possibility~~ and it has potentials for;

- a) fuel generation - Biogas
- b) vitamin E Extraction
- c) Palm Diesel plant
- d) Fibre utilization chipboard
- e) Mushroom growing with empty bunch fibres.
- f) Bunch ash can be used for fertilizer for oil palm.



## 5. Organisation and Management

The primary activities should be undertaken by AFO is the marketing of FFB and Processing of FFB. Other secondary activities for support needed is Input Supply, Credit Supply and Extension.

### 5.1 Marketing

2 task important

- a) The procurement of FFB
- b) The marketing of FFB

Under the task of procuring of FFB other task need to be taken are ;

- a) Collection of FFB from S.A.U or Farmers Group or Individual Farmers.
- b) Transportation of FFB from Collection Points to the private mills.

Under the task of marketing of FFB other activities need to be carried out.

- a) Transport of FFB from collection points to the private mills.

To operate these activities management functions need to be carried out at marketing activities are ;

- i) Operational planning
- ii) Operational control
- iii) Allocation of manpower

3.2 Processing

It was proposed for AFO to form a subsidiary company to establish and run the palm oil mill. The Functions of the Manager of the Company can be undertaken by the General Manager.

It is propose that AFO should set up 1 palm oil mill by 1990. The concept of establishing of mills is putting up low capacity mills at scattered peaces and remote areas where FFB produce by smallholders is sufficient to supply the mill. For expansion, it is projected that 1 - 4 mini palm oil mills can be established.

The palm kernel produce then by mini mills can be collected and further processed into palm kernel oil and palm kernel meal at centralised AFO level.

In processing three tasks need to be taken are,

- a) Procurement of FFB and troorage of FFB
- b) Mill operations
- c) Labour relations

The task of processing meal management function of operational planning, operational controls and allocation of manpower, to be carried out under the tasks of mill operations other important task to be done are ;

- i) Production planning
- ii) Processing
- iii) Engineering and mantainance
- iv) Quality control

The staff needed for the mill is as in table (17). The mini mill only need just a supervisor with Higher School Certificate qualification to manage and operered the mill.

### 5.3 Member Participation

Informal farmers group mobilise by Extension Agent of Department of Agriculture through project approach which will be actively participating in agricultural activities and group cooperation. This group will then link with small agricultural units of AFO for service of marketing input supply, credit supply. The S.A.U will represent the farmers group and individual farmers at the general assembly and during election of Board members. Board members are responsible for implementation of the development policy of the AFO agreed by the general assembly and monitoring the implementation of policy at operational level by the general manager and the operational management staff.

### 5.4 Organisation Chart

Refer figure 4

6. Financial Analysis Of A Mini-Mill Palm Oil Mill  
At 2.0 TPH Provision For Expansion To 5 TPH.

Assumption

- 1) Mills is working at 3 TPH
- 2) Mills is working to a capacity rate as below;

<u>Year</u>	<u>Rated Capacity</u>
1	70 %
2	80 %
3	90 %
4	90 %
5	90 %
6	90 %
24	90 %

- 3) Procurement target can be achieved.
- 4) A.F.O is trying to run 1 mill in one area first as a pioneer before investing it in other area.
- 5) The cost of fixed assets are base on estimates valid up to June 85.
- 6) Approval from relevant authorities are obtainable with reasonable <sup>time</sup> ~~times~~.
- 7) It is assume that by the third year operation, the amount of F.F.B processed is constant.

6.1	<u>Fixed Cost</u>	<u>(M \$'000)</u>
a)	Land	40
b)	Civil works	25
c)	Buildings - Plant	54
	- Office	12
	- Ancillary	8
d)	Machinery and Equipment	1,011
e)	Installation - Electrical	15
f)	Workshop & Lab Equipment	20
g)	Furniture & Office Equipment	10
h)	Water Treatment Plant	20
i)	Effluent Treatment Plant	25
j)	Tractor	60
k)	Contingency including provision for expansion to 5 TPH	60
	Total fixed assets	<u>1,360</u>
	Preliminary and Pre-Operating Expension	30
		<u><u>1,390</u></u>
	Working Capital Needed For First Year	110
		<u><u>1,500</u></u>

Computation of working Capital needed for first year can be seen in - Appendix (viii)

Note: The price of machinery is based on quotation January 83. The installation of cost is estimated by engineers based on consultation with machinery supplies. The value of land and building is estimated. Refer Appendix (viii) and (ix)

6.3 Variable Cost

(i) Raw materials,

<u>Year</u>	<u>Costs</u>
1	604800
2	967680
3	114560
4	1244160
5	1244160

For the detail see Appendix (1)

Further detail of variable cost can be seen in Appendix 1. The variable cost are as follow

	<u>Total for 24 years (\$M, '000')</u>
(1) Purchase of FFE	= 28,803
(2) Labour	= 1,925
(3) Water fuel & tube oil	= 1,558
(4) Consumable stores	= 296
(5) Repairs and maintainance	= 994
(6) Factory overhead	= 705
(7) Selling expenses	= 1,227
(8) Admin overhead	= 1,112
(9) Contingjeng 5%	= 1,832
	<hr/>
Total variable cost	= <u><u>38,252</u></u>

## 6.2 Income

Base on, \$720 per tone C.P.O

\$410 per tone palm kernel

And F.F.B priced = \$96.75 per tone F.F.B

FFB Requirement and production of C.P.O and palm kernel is according to proposed rated capacity for mill to work according to years as below.

<u>Year</u>	<u>% Rated Capacity</u>	<u>No. % Shift</u>	<u>Hours/ Shift</u>	<u>FFB Regweed</u>	<u>Oil Produce</u>	<u>Kernel Produce</u>
1	70	1	10	6300	1197	252
2	70	2	8	10680	1915.2	403.2
3	80	2	8	11520	2188.2	460.8
4	90	2	8	12960	2462.4	518.4
5	90	2	8	12960	2462.4	518.4

Note: Full capacity corespond to 14, 400 tonnes FFB per 300 days.

Gross Income = Scales of oil produce + Palm kernel

<u>Year</u>	<u>Scales (\$M 1000)</u>
1	965
2	1544
3	1762
4	1985
5	1985

#### 6.4 Cash Flow

Cash flow can be refer to Appendix (ii).

Computation of IRR Appendix (iii).

Computation of NPV and B/C Ratio Appendix (iv).

From the cash flow it is found that :

- (a) The breakeven point of the project is on the 6<sup>th</sup> year.
- (b) The IRR computed is 21.08%.
- (c) The NPV Benefit - NPV cost = positive.
- (d) The benefit/cost rates = 1

1

Thus we can conclude that this project is viable to be implemented.

The profit for 24 years after deduction of total expenses and interest = M\$ 6,292,000

#### 6.5 Proposed loans and Payback Period and Depreciation Value of Machinery

This can be refer to Appendix (v).

#### 6.6 Profitability Statement

This can be refer to Appendix (vi).



## 6.7 Important Points and Perimeter of the Financial Facibility

Thus the proposed project is viable. The establishment of the mill will give and ready outlet of FFB to smallholders in remote area. It also provide employment and involvement of rural folks with palm oil milling technology. With the idea to operates the mills through the cooperative that owns and operates the mills. This would provide other advantages and benefits to farmers.

With referance to the financial analysis, some important point are discussed below,

### a) Production

The production for the first year of operations is assumed at 70 %. Capacity for an extended 10 hour shift. The one shift operation is recommended so that the mill staff could familiarise themself with the operation of the mill. Two shift operations could be implemented in the second year.

The mills should be backed by FFB productions at least 1300 acres of matured palms producing on average of 8 tons of fruits yearly.

### b) Profitability

The profitability of the mill is sensitive to cost of FFB ex-mill and the percentage utilization of the milling capacity. It is in the best interest of the mill to ensure that the purchased is sufficient to operate at least 70 % of the milling capacity.

c) Price of FFB

The purchase price of FFB at \$96 per tonne ex-farm is attractive considering that the mill does not face any competition because of its isolation. It is possible for the mill to purchase the FFB even at \$90 per tonne ex farm because of no competition. This is however is not done because the highest FFB price is a better incentive to the farmer than highest profits from the mill (which is taxable) to develop and maintain their farmers.

The purchase and farm portation of FFB should be made by the mill through the APO to discourage any middle man.

d) Operational Overheads

The operational overheads constitutes the following items:-

- (i) Labour costs
- (ii) Water, fuel and tube oil
- (iii) Consumable stores
- (iv) Repairs and maintenance
- (v) Factory overheads
- (vi) Selling expenses
- (vii) Administrative expenses

The above expenditures represent about 10 - 11 % of the percentage on sales. For comparison, the cost of big mills averages around 8% - 9%; this the big mills is much efficient since lower volume of FFB processed over which the cost could be spread above individual cost can be spread full and this is possible since the design of mill could facilitate the additional through put without any loss in performance and efficiency.

c) Adjustment of figures for tabulation

For tabulation purpose in the annexes the figures are rounded up to the nearest \$1000.

## Budget

To achieve the objective of intergrating the activities of production of FFB from smallholders to marketing and processing by the MIO the Budget needed is of two area;

1. Procurement Budget
2. One 2.5TPH-5TPH mill. Budget in 1990

which is expected to operate in 1991.

### 7.1 Procurement Budget

In procuring the total cost involve

- a) Price if ran FFB
- b) Transport course
- c) Weighing course, etc.

As refer to the procurement plan in chapter

thus the cost of procurement between 1986-1990 is as follows;

Year	Tonne of FFB Procure	Cost of FFB (M\$)	Transport Cost (M\$)	Weighing Cost (M\$)	Total Cost involve
1986	5,511	440,000	30,196	9,371	495,005
1987	8,348	851,496	91,828	33,392	976,716
1988	10,199	1,651,788	178,189	64,776	1,964,898
1989	26,559	2,709,018	226,149	106,236	3,107,404
1990	35,902	3,602,004	394,922	143,608	4,200,534

Assumption : At price of FFB = \$110/tonne

## 8. Recommendations

To have an intergrated cooperative system for the AFO in the district of Kuala Langat, the anchor activity of procurement and processing of the F.F.B of the oil palm smallholder should be undertaken by this primary level cooperative with high priority.

In procurement of FFB the AFO will face heavy competitions with the middlemen since there is a ready market of FFB in the districts. Other than that the AFO is operating one activity from its centralised location. Thus middlemen which compete for FFB from smallholders around its area and in the presence of private mill in that area also can give a disadvantage position to the AFO.

To compete with middlemen the AFO should look into the possibility of establishing its own mill so that higher added value of price can be given to the farmers but before advancing into this project the AFO have to strengthened its control. To achieve this the AFO should convinced the state government of its plan and have a good liason with extension department. Its procurement of FFB should concentrate more in thus government land schemes and project area of oil palm develepeement of the D.O.A. The D.O.A is also responsible with the extension of oil palm in the government land schemes.

The A.F.O should have its Assistant Development Officer in Charged in oil palm procurement section to work hand in hand with extension officer of D.O.A. They can work together in promoting marketing extension and cooperative education to farmer members. Other than that supplying of good seedlings is very important for farmers so as to ensure good production and the AFO should undertake oil palm nursery project.

The supply of inputs along giving of credit and linking with marketing should be the objective at the extension level to achieve procurement target.

When the procurement target is achieved, supposed projected in 1990, choosing the right capacity of mills and right location is very vital in (i) determining FFB supply can be obtainable at sufficient supply and with the competition with middlemen for FFB.

- ii) to compete with big mills for supply of fruits from middlemen.

Thus the concept of centralised mill that is building a big capacity of 10 ton-40 tons per hour mill would cause transportation problem, heavy competition from middlemen and heavy competition from private mills.

Thus the concept of putting up scattered mills with smallholders would go along into breaking the strong hold the middlemen have on rural farmers.

In investment in the oil palm mill, the AFO should set up a subsidiary a company to take care of the mill. Investment from oil palm smallholders should be campaigned at the extension level and collected for the company equity in undertaking of the project.

Investment should be done for only one mill first, starting in 1990 and should be monitored closely to ensure success.

To cater for processing of surplus FFB procure from smallholders after 1990, the AFO should look into another remote oil-palm smallholders area. This small mini-mill in remote area of oil palm smallholders place will eventually, procure most of FFB produce by smallholders.

At the AFO level, the further processing of palm kernel should be under taken, in which the palm kernel produce by mini-mills can be accumulated and processed into products of palm kernel oil and palm kernel meal, which have high demand in the world market. Thus adding much more value to the price of the F.F.B of smallholders.

Table 1 Distribution Of Oil Palm Areas by Sectors in 1970, 1980 and 1984

	<u>1970</u>		<u>1980</u>		<u>1984P</u>	
	Area in hectares	%	Area in hectares	%	Area in hectares	%
Private Estates	233,552	75.7	557,659	52.6	700,291	51.4
Government Schemes						
FELDA	65,200	21.7	316,550	29.0	401,740	29.5
FELCRA	300	0.3	18,851	1.8	29,329	2.2
RISDA/ESPEK	NIL	NIL	20,472	1.9	25,540	1.9
State Schemes	N.A.	N.A.	85,529	8.0	104,573	7.7
Independent Smallholders	8,800+	2.9	90,446	6.6	99,703	7.3
Total	308,352	100.0	1,069,507	100.00	1,361,176	100.0

Sources: Department Of Statistics, Kuala Lumpur.  
 PORLA.  
 RISDA.

+ The figure of 8,800 hectares refers to holdings owned by ex-rubber smallholders who replanted their rubber with oil palm and had obtained a replanting grant from Rubber Industry Board (RIRB).

P Preliminary.

Table 2      Statistics On Significance Of Independent  
Oil Palm Smallholders 1984

Area <sup>a</sup>	99,703
Number Of Smallholder <sup>b</sup>	29,110
Number Of Smallholder Licenced by PORLA <sup>†</sup>	28,300
FFB Production (Annual) <sup>e</sup>	1.07 million tonnes
Total FFB Income <sup>e</sup>	\$100-\$200 million
Average Income For Smallholder <sup>e</sup>	\$287-\$575
Average Area for Smallholder (ha) <sup>e</sup>	3.4
Average Yield of FFB (tonnes/ha) <sup>e</sup>	13.4

Source:

- a PORLA
- b RISDA
- e Estimated

Assumed immature area is 80% and total area planted

- FFB production is obtained from CPO production of 3.71 million tonnes divided by a factor of 0.19
- FFB production is only 5.5% of the total FFB production of 19.53 million tonnes.



Table 3

MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR  
 AGRICULTURE AND RURAL DEVELOPMENT PROGRAMMES<sup>1</sup>, 1981-90  
 (M\$ million)

Programme	Fourth plan allocation, 1981-85	Estimated expenditure, 1981-85	Fifth plan allocation <sup>2</sup> 1986-90
Land and regional development	3,148.84	3,039.90	4,418.97
New land development	2,218.61	2,218.23	2,878.24
Regional development	930.23	821.67	1,540.73
In situ development	2,859.44	2,801.89	5,094.44
Intergrated agricultural development projects	505.62	476.66	1,560.11
Drainage and irrigation	1,451.26	1,424.64	337.44
Replanting	398.61	396.64	1,909.97
Rehabilitation	503.95	503.95	1,286.92
Forestry	20.96	20.94	264.22
Fisheries	301.48	301.48	263.35
Livestock	135.46	135.46	185.23
Support services	1,111.60	1,082.18	1,273.35
Input subsidy for padi	430.16	430.16	505.95
Agricultural credit, processing and machinery	606.27	576.85	743.27
Extension and other services	75.17	75.17	24.13
Other programmes of MOA	310.42	289.49	300.39
Total	7,888.20	7,617.34	11,799.95

## Note:

1. Figures do not cover some rural development programmes such as water supply, roads, and health services. The respective figures are reflected in the relevant chapters.
2. Under the Fifth Plan, the public sector has been redefined to include the non-financial public enterprise (NEPEs) which previously were treated as belonging to the private sector.



Table (4)

## CROPPING PATTERN OF THE DISTRICT OF KUALA LANGAT

Cropping Pattern	Acreage (ha) of smallholders	Estate Acreage (ha)	Acreage under state landscheme (ha)	Total Acreage (ha)
Oil Palm	8,289.41	17,153.3	1,304.85	26,747.6
Coconut	1,241.1			1,241.1
Coconut/ Cocoa	822	394.3		1,216.3
Coconut/ Coffee	3,663			3,663
Coffee	1,037.4			1,037.4
Rubber	1,007.7	3,538.6		4,546.3
Durian (fruit)	414.6			414.6
Rambutan (fruit)	414.6			414.6
Vegetables	203.3			203.3
Ginger	162.6			162.6
Pineapple (intercrop)	73.2			73.2
Pineapple (solecrop)	36.6			36.6
Banana	81.3			81.3
Papaya	10.2			10.2
Sugarcane	2.03			2.03
Maize	18.3			18.3
Tobacco	4.07			4.07
Tea		134.1		134.1
	17,481.41	21,220.3	1,304.85	40,006.60

Source: Annual Reports of the Department of Agriculture, State of Selangor, 1986.

Table 5

Breakdown of Soil Types in the  
District of Kuala Langat

Soil Types	Acreage (ha)
1) River Alluvium	34645.9
2) Marine Alluvium	9828.1
3) Swampy Peat Soil	30548.3
4) Cley Loam Soil	1847.2
Total	76869.5

Source:

District Agricultural Department  
of Kuala Langat (Breifing Reports  
of the Agriculture Officer on  
18th August, 1986 on the first  
meeting of JPPAAD, Kuala Langat.

Table 6

Monthly Rain fall patten for District of Kuala Langat  
from 1977 - 1986 in mm.

Years	Months	Jan.	Feb.	March	April	Mei	June	July	August	Sept.	Okt.	Nov.	Dis.
1977		51.8	62.74	34.8	53.34	112.78	125.48	92.46	122.94	170.18	197.87	335.28	248.0
1978		151.13	130.30	145.29	84.07	106.68	74.17	105.16	283.21	348.99	263.4	313.69	105.0
1979		188.21	90.42	58.42	152.9	122.42	163.83	272.5	233.8	91.0	315.0	249.0	48.0
1980		174.1	93.4	158.8	133.4	118.1	153.2	178.3	90.7	229.3	274.0	124.1	89.0
1981		145.5	125.6	96.16	210.8	92.8	120.5	73.9	31.7	167.8	304.0	208.7	206.0
1982		29.8	33.0	20.1	135.4	156.3	40.6	80.6	90.4	170.4	220.1	350.0	411.0
1983		83.0	59.0	30.6	224.7	220.7	121.7	287.5	265.3	239.8	112.3	136.9	174.7
1984		140.2	122.8	108.9	234.8	224.1	118.3	172.6	265.0	91.4	223.8	279.8	404.2
1985		114.2	94.5	318.5	127.8	332.9	156.6	156.6	56.4	260.0	247.3	252.5	125.9
1986		91.2	55.6	88.5	174.6	213.7	88.2	61.8	69.7	191.4	195.0	299.9	197.8
Average		116.916	86.736	106.010	141.681	170.048	116.258	148.227	150.000	195.927	235.2	212.451	204.50

Source: Annual Reports from 1977 - 1986 of the Department of Agriculture,  
State of Selangor, Malaysia.

Table 7      Oil Palm Acreage Cultivated  
in the District of Kuala Langat  
by Independent Smallholders

Year	Independent Smallholders in villagers		Independent Smallholders in State Land Scheme	
	Acreage (ha)	No.	Acreage (ha)	No.
1972	2,226.19	742	-	-
1973	2,584	861	-	-
1974	-	-	-	-
1975	3,588.3	1,363	-	-
1976	5,439.3	2,288	404.85	166
1977	5,728.88	2,577	404.85	166
1978	6,004.28	2,714	404.85	166
1979	6,332.3	2,878	404.85	166
1980	7,174.83	3,299	505.55	311
1981	7,345.95	3,470	505.55	311
1982	7,595.2	3,594	505.55	311
1983	7,595.22	3,594	940.85	701
1984	7,595.22	3,594	1,004.85	765
1985	7,655.84	3,624	1,004.85	765
1986	8,289.37	3,940	1,304.85	1,065

Source: Annual Reports of Department of  
Agriculture, State of Selangor  
from 1972 - 1986.

Table (8)

Information of AFO District of Kuala Langat in 1985

1)	Registration	-	9/3/1977, Farmers organization Act 109, 1973	
2)	Membership	-	2544 ( 39 % of Total Farm Family)	
3)	Capital	-	\$ 400,000.00	
4)	Paid up capital	-	\$ 102,174.00	
5)	Management Force	:	General Manager	: 1
			Assistance Development	: 6
			Junior Account Clerk:	1
			Junior Clerk	: 1
			Stor keeper	: 1
			Security	: 2
			Driver	: 3
			Lorry Assistance	: 3
			Typist	: 1
				<hr/>
				19
				<hr/>

Table 9 : PERFORMANCE OF FPB MARKETING ACTIVITY OF  
THE AFO KUALA LANGAT FROM 1981 - 1986

ITEMS	YEAR	1981	1982	1983	1984	1985	1986
1) Sales		828,175.44	834,448.72	795,070.35	922,268.83	864,335.17	510,164.29
FPB (Kg)		5,962.179	6,135.773	5,068.438	3,739.702	4,858.644	5,510.000
2) Cost of FPB		781,879.64	738,511.46	699,051.98	852,090.28	801,590.77	474,060.31
3) Comission		5,557.50	5,162.94	3,722.55	1,861.40	893.97	10,936.04
4) Transportation		48,342.42	58,835.76	53,624.49	35,870.82	32,723.07	30,196.09
5) Weighing and etc		12,339.38	14,306.70	17,714.68	15,050.90	10,034.21	9,871.35
6) Total Cost		848,118.94	816,816.86	774,113.70	904,873.39	845,292.02	495,004.77
7) Supleus		( 19,943.50)	17,631.86	20,956.65	17,395.44	19,043.15	15,099.52

Source : AFO, Kuala Langat, 1987

Table 10

## Source Of Supply Of FFB For AFD

Kuala Langat

Small Agricultural Units	No. Of Member	Average FFB Procured (tonne / Year)
1) Sg. Kelambu village	84	2,038,167
2) Sg. Buaya village	40	400,677
3) Sawah village	23	458,730
4) Jenjarom village	15	455,256
5) Labohan Dagang village	10	110,024
6) Olak Lempit village	32	504,800
7) Batu 10, Kebun Baru village	25	438,520
8) 2L Group, Kg. Batu 10 village	20	285,860
9) Batu 9, Sijangkang village	5	83,286
10) PPK, South Sepang	45	330,000
11) PPK Dengkil	25	350,000
12) Kelanang Land Schemes	45	360,000
Total		5,835,320



Table 11      Palm Oil Mills in District  
of Kuala Langat

Estate/Scheme	Capacity	Supply of FFB
1) Dusun Durian Estate	10 ton/hr	Own Estate
2) Sg. Sedu Estate	12 ton/hr	Own Estate
3) Gadong Estate	20 ton/hr	Own estate and middle man
4) Brook Land Estate	16 ton/hr	Own estate and middle man
5) Tumbok Estate	10 ton/hr	Own estate and middle man
6) Sri Langat Estate	20 ton/hr	Own estate and middle man
7) West Carey Island Estate	50 ton/hr	Own Estate
8) Semisa Sdn Bhd.	10 ton/hr	Own estate and middle man
9) Seri Ulu Langat Sdn. Bhd.	20 ton/hr	Middle man from Kuala Langat and Sepang

Source: Annual Reports 1986, Department of Agriculture, State of Selangor

Name	PPK Member	Age In Years	Acreage (Acre)	Age Of Palm	Yield (ac)		No. Of Palm (ac)	Seedlings Variety	Source Of Seedling	Lowest Price P.P.B/tonne	Mandays Allocated	Marketing Officer	Days Of P.P.B From Palm To Mills	Extension Details	Determination Of Wt	Distance From Factory
					(Deal)	(Low)										
1) Saadah Bte Salam Bt. 36, Bkt. Changgang, K. Langat	✓	47 yrs	5 ac	9 yrs	3.5 tonne	1 tonne	50 palms	Dura	Own Nursery	-	-	Middle man	8 hours	Harvesting And Marketing Extension	Weighing At Mill	25 Km
2) Marsinah Bte Hj. Shafie, Jalan Bahagia L/Dagang	✓	50 yrs	7 ac	15 yrs	4.5 tonne	1.5 tonne	50 palms	Dura And Pesifera	Own Nursery	-	17 days	Middle man	8 hours	"	Weighing At Mill	16 Km
3) Zulkapli Hj. Taib Bt. 9, Kebun Baru	×	34 yrs	5 1/2 ac	10 yrs	8 tonne	3.5 tonne	55 palms	D x P	-	\$70/tonne	20 days	Middle man	24 hours	"	Weighing At Palm	8 Km
4) Yusop Bin Pairin Bt. 10, Kebun Baru	✓	45 yrs	5 ac	15 yrs	5 tonne	1 tonne	56 palms	D x P	-	\$70/tonne	10 days	2L/PPK man	48 hours	"	Weighing At Palm	6 Km
5) Saroni Laksa Sg. Ingat, Bardar	×	44 yrs	4 ac	5 yrs	4 tonne	500 kg	60 palms	D x P	Estate Nursery	\$50/tonne	5 days	Middle man	8 hours	"	Weighing At Palm	2 Km
6) Hj. Hasan Hj. Ishak Sg. Puaya	✓	58 yrs	6 ac	12 yrs	8 tonne	2 tonne	60 palms	D x P	Estate Nursery	\$50/tonne	-	Middle man	6 hours	"	Weighing At Palm	1 Km
7) Ngali Kayat Sg. Lang Tengah	✓	44 yrs	2 ac	7 yrs	1.5 tonne	0.5 tonne	62 palms	D x P	Government Contract Nursery	\$50/tonne	6 days	Middle man	12 hours	"	Weighing At Palm	2 Km
8) Hj. Kusairi Hj. Mansor Sg. Lang Tengah	✓	63 yrs	2 ac	7 yrs	1.5 tonne	0.5 tonne	60 palms	D x P	"	\$65/tonne	4 days	Middle man	4 hours	"	Weighing At Palm	2 Km
9) Amat Rosiman Sg. Lang Tengah	✓	46 yrs	3.5 ac	7 yrs	3 tonne	0.5 tonne	60 palms	D x P	"	\$60/tonne	6 days	Middle man	24 hours	"	Weighing At Palm	2 Km
10) Tukmin Bin Nor Sg. Lang Tengah	✓	56 yrs	3 ac	10 yrs	2 tonne	1 tonne	65 palms	D x P	Own Nursery	\$65/tonne	6 days	Middle man	12 hours	"	Weighing At Palm	3 Km
11) Mastor Hj. Yasin Kg. Olak Lempit	×	-	2 ac	6 yrs	2 tonne	500 kg	60 palms	Dura	-	\$25/tonne	10 days	2L man	4 hours	"	Weighing At Palm	2 Km
12) Sipol Bin Arju Kg. Olak Lempit	×	68 yrs	3 ac	16 yrs	5 tonne	3 tonne	60 palms	Dura	Own Nursery	-	17 days	Middle man	3 hours	"	Weighing At Mill	-
13) Sidek Abd. Bahau Kg. Olak Lempit	✓	49 yrs	6 ac	8 yrs	-	-	60 palms	D x P	Estate Nursery	\$50/tonne	5 days	Middle man	8 hours	"	Weighing At Palm	3 Km
14) Sabur Bin Morait Kg. Olak Lempit	✓	-	5 ac	13 yrs	5 tonne	0.22 tonne	40 palms	Ignorance	Private Nursery	\$50/tonne	3 days	Middle man	3 hours	"	Weighing At Mill	4 Km
15) Hj. Khalani Mangun. N. Darat	✓	38 yrs	8 ac	2 yrs	-	-	60 palms	D x P	Estate Nursery	-	20 days	Middle man	48 hours	Harvesting	Weighing At Palm	16 Km
16) Sapun Salan Mancong Darat	✓	40 yrs	3 ac	10 yrs	0.85 tonne/ months	0.25 tonne/ months	40 palms	D x P	Estate Nursery	\$67/tonne P.P.B	10 days	Middle man	28 hours	Harvesting	Weighing At Palm	10 Km
17) Turah Anal Sain RTE B/Changgang	✓	40 yrs	6 ac	10 yrs	1.8 tonne/ months	0.5 tonne/ months	60 palms	D And Terava	Private Nursery	\$40/tonne P.F.B	20 days	Middle man	12 hours	Harvesting	Weighing At Mill	6.5 Km

Source: A small survey data of 57 samples for of Oil Palm small holders

No.	Name of Grower	PKK No.	Age in Years	Age of Palm (Yrs)	Yield (t/ha)		No. of Palms/ha	Seedling Variety	Source of Seedlings	Lowest Price FFB/tonne	Maturity allocated	Marketing	Time of delivery of FFB from Farm	Extension	Determination	Distance from Station
					Peak	Low										
19f	Rajuri B. Karlim Rt. Bukit Changgang	✓	36	6 acre	10 years	1.3 tonne	0.16/tonne	60 palms	Tenera	Contract Nursery	\$40/tonne	10 days	Middle man	12 ours	Harvested and marketed	10 Km
20	Sauji B. Pudin Kg. Bukit Changgang	✓	36	6 acre	10 years	0.8 tonne	-	60 palms	Dura	Government Contract	\$45/tonne	10 days	Middle man	12 ours	Weighting at Mill	5.3 Km
21	Adnan S. Saper Rt. Bukit Changgang	X	34	6 acre	13 years	1.3 tonne	0.16 tonne	60 palms	Dura/Tenera	Government Contract	\$45/tonne	10 days	Middle man	12 ours	Weighting at Mill	6.5 Km
22	Jezah B. W.L.	✓	40	6 acre	13 years	0.6 tonne	0.16 tonne	60 palms	Dura/Tenera	Government Contract	\$40/tonne	6 days	Middle man	12 ours	Weighting at Mill	6.5 Km
23	Khulid B. Hanapi Kanchong Darat	✓	62	5 acre	-	-	-	-	-	-	-	-	-	-	-	-
24	Mazuki Khaslah	✓	60	1 acre	10 years	1 tonne	-	60 palms	(Ignorance)	Government Contract	\$60/tonne	Weighting	Middle man	8-12 ours	Weighting at Farm	18 Km
25	Met Zin B. Adam	X	32	5 acre	12 years	1 tonne	0.4 tonne	60 palms	Tenera	Estate Nursery	\$50/tonne	8 days	Middle man	24-49 ours	Weighting at Farm	19 Km
26	Salvamar K. Horah	X	31	1.5 acre	10 years	0.5 tonne	0.2 tonne	60 palms	Tenera	Estate Nursery	\$60/tonne	5 days	Middle man	2 ours	Weighting at Farm	10 Km
27	Hj. Niron Mat Romli Sungai Lang Baru	X	80	2 acre	7 years	0.75 tonne	0.5 tonne	60 palms	Tenera (Ignorance)	Government Contract	\$60/tonne	8 days	Middle man	30-72 ours	Weighting at Farm	13 Km
28	Shahr B. Tapan Utak Lembit	✓	52	3 acre	5 years	-	-	60 palms	Tenera	Government Nursery	\$80/tonne	30 days	Middle man	8 ours	Weighting at Farm	3 Km
29	Sajuri B. Anuar	✓	66	2 acre	4 years	0.075 tonne	0.025 tonne	50 palms	(Ignorance)	Private Nursery	\$60/tonne	15 days	ZL/PEK	1-5 ours	Weighting at Mill	3 Km
30	Sidat B. Abd. Rahman Kg. Alr. Tawar, Bandar	✓	49	6 acre	8 years	1.3 tonne	0.13 tonne	60 palms	-	Estate Nursery	\$50/tonne	5 days	Middle man	8 ours	Weighting at Farm	3 Km
31	Ahmad B. Abd. Rahman Kg. Scl. Cheding	✓	62	4 acre	10 years	3 tonne	-	-	-	-	-	-	-	-	-	-
32	Israhim Hj. Yusof Kg. Jenjaram	✓	57	6 acre	15 years	5 tonne	1.5 tonne	60 palms	-	-	-	20 days	Middle man	12 ours	Weighting at Farm	6 Km
33f	Mazuki Muli Kg. Jenjaram	✓	45	6 acre	6 years	6 tonne	1 tonne	60 palms	Dura	Private Nursery	\$48/tonne	10 days	Middle man	6 ours	Weighting at Mill	4 Km
34f	Ahmad B. Abd. Rahman Kg. Scl. Cheding	✓	62	6 acre	15 years	4.5 tonne	1 tonne	60 palms	Dura/Dur	-	\$48/tonne	12 days	Middle man	12 ours	Weighting at Farm	5 Km
35f	Osman Abd. Kadir Kg. Kcl. Cheding	✓	49	6 acre	10 years	4 tonne	2 tonne	60 palms	Dura/Dur	Estate Nursery	-	10 days	Middle man	12 ours	Weighting at Farm	8 Km
36f	Dakula Kenoa Kg. Scl. Cheding	✓	44	6 acre	10 years	4 tonne	2 tonne	60 palms	Dura/Dur	-	-	10 days	Middle man	10 ours	Weighting at Farm	6 Km
37f	Hj. Yusof Resodato Kg. Alr. Tawar, Bandar	✓	70	34 acre	6 years	2000 kilo	700 kilo	50 palms	-	-	\$180/tonne	-	Middle man	24 ours	-	5 Km

Table 13

Production of Independent Smallholders  
Compared to Estate Sector

Age Sector	Estate			Smallholders		
	Production/yr (FFB)	E.R of FFB	E.R of PALM KERNEL	Production/yr (FFB)	E.R of FFB	E.R of PALM KERNE
1-5 years	11 tonne per/ ha	12%-17%	3.8%	8 tonne per/ha	12%	3.0%
6-10 "	19 tonne per/ ha	18%-21%	4.0%-4.4%	15.2 tonne per/ha	16%-20%	3.5-4.2%
11-15 "	21 tonne per/ ha	21%	4.4%	16.8 tonne per/ha	20%	4.2%
15-20 "	19 tonne per/ ha	21%	4.4%	15.2 tonne per/ha	20%	4.2%

Source:

Annual Reports of Department of  
Agriculture, State of Selangor  
( 1972 - 1986 )

Table 14 SIMULATED PRICE OF FFB AT MILL GATE BY PORLA  
MODIFIED FORMULA

Price	Palm Oil						Palm Kernel Price							
	300	350	400	450	500	550	600	300	350	400	450	500	550	600
500	63.16	65.12	67.08	69.04	71.00	72.96	74.92	106.36	108.32	110.28	112.24	114.20	116.16	118.12
350	71.80	73.76	75.72	77.68	79.68	81.60	83.56	149.56	151.52	153.48	155.44	157.40	159.36	161.32
600	80.44	82.40	84.36	86.32	88.28	90.24	92.20	166.80	168.80	170.76	172.72	174.68	176.64	178.60
650	89.08	91.04	93.00	94.96	96.92	98.88	100.84	168.80	170.76	172.72	174.68	176.64	178.60	180.56
700	97.72	99.68	101.64	103.60	105.56	107.52	109.48	175.48	177.44	179.40	181.36	183.32	185.28	187.24
750	106.36	108.32	110.28	112.24	114.20	116.16	118.12	184.12	186.08	188.04	190.00	191.96	193.92	195.88
800	115.00	116.96	118.92	120.88	122.84	124.80	126.76							
850	123.64	125.60	127.56	129.52	131.48	133.44	135.40							
900	132.28	134.24	136.20	138.16	140.12	142.08	144.04							
950	140.92	142.88	144.84	146.80	148.76	150.72	152.68							
1000	149.56	151.52	153.48	155.44	157.40	159.36	161.32							
1050	158.20	160.16	162.12	164.08	166.04	168.00	169.96							
1100	166.84	168.80	170.76	172.72	174.68	176.64	178.60							
1150	175.48	177.44	179.40	181.36	183.32	185.28	187.24							
1200	184.12	186.08	188.04	190.00	191.96	193.92	195.88							

Assumptions:

Extraction rate of PK is 4% ---  $C_1 = 0.96$   
 " " " " CPO is 18% ---  $C_2 = 0.98$   
 cost of processing per tonne is \$35.00

Table 15

Oil Palm Acreage Of Independent Smallholders  
in Kuala Langat District, 1986.

Age of Palm	Independent Smallholders in villages		Independent Smallholders in state schemes	
	Acreage (ha)	No.	Acreage (ha)	No.
1-3 years	694.2	346	300	300
4-5 "	-	-	454.3	454
6-10 "	1866.3	1017	145.7	145
11-15 "	3502.7	1835	404.85	166
16-20 "	2226.19	742	-	-
	8289.4	3940	1304.85	1065

Table 16

An Estimated Production of FFB and C.P.O. and Palm Kernel of Independent Smallholders in Kuala Langat, 1986.

Age Group	Total Independent smallholders		Extraction Rate		Average Production of FFB ha/year	Marketable surplus of FFB (ton/yr)	Potential production of CPO per/yr	Potential production of Palm Kernel per/yr
	No.	Acreage (ha)	C.P.O.	Palm Kernel				
1-3 years	646	1040.2	-	-	-	-	-	-
4-5 "	454	454.3	12%	3.0%	8 tonnes	3634.4	436.1	109.0
6-1 "	1162	2012	16-20%	3.5-4.0%	15.2 tonnes	30582.4	5505	1146.84
1-15 "	2001	3907.2	20%	4.2%	16.8 tonnes	65640.9	13128.2	2757
5-20 "	742	2226.19	20%	4.2%	15.2 tonnes	33838.1	6768	1421
	5005	9639.9				1336950	25837	5434

Table ( 7 )

The list of staff and workers normally employed in a 20 ton/hour mill is given below, in comparison to what the CHD mini-mill will need for one shift milling operation.

	Stations	Staff/Workers	Large mill 20 tons/hr	CHD Mini- mill 5 tons/ hour
1.	Management	Mill Engineer/Managaz	1	1 Supervisor
		Asst. Engineer	1	
			2	1
2.	Staff	Chief Clerk	1	
		Asst. Clerk/payroll	1	
		Typist	1	1 handyman
		Mechanical foreman	1	
		Electrical Chargeman	1	
		Storekeeper	1	
		Process Supervisor	2	1 fitter
		Laboratory asst.	1	
			9	2
3.	Workshops Maintenance	Fitters/welders/turners	5	-
		Fitters mates/electricians	5	-
			10	-
4.	Processing	Fruit reception	3	1
		Steriliser/Crane bay	4	1
		Crane operator		
		Press Station/digestor	2	1
		Depricarper	1	-
		Nut/kernel plant	2	1
		Clarification Station	2	1
		Boiler house	4	1
Power Staion	2	1		
			21	7
5.	Others	Outside work/old milling		



Cleaning, etc.	1	-
Incinerator	1	-
Water/Supply	1	-
Effluent plant	1	-
<b>Total</b>	<b>48</b>	<b>11</b>

Note

If the mill is operated in two shifts, the group 4 workers will have to be twice as many. Therefore the full complement for 1 and 2 shift milling work will be as follows:-

	20 ton/mill		5. T/hr CHD Mimi-mill	
	1st shift	2nd shift	1st shift	2nd shift
Management	2	-	1	-
Staff	9	-	2	-
Maintenance	10	-	-	-
Processing	21	21	7	7
Others	6	-	1	1
<b>Total</b>	<b>48</b>	<b>21</b>	<b>11</b>	<b>8</b>

The mini-mill can be managed by a supervisor with an education level of school certificate, after he is given a few weeks of basic training in an oil mill. It will be stressed, however that regular visits by an experienced palm oil processing supervisor will help to detect a problem at an early stage, and solve it before it can affect the processing work of the mill.

Fig. I A Schematic Diagram Of Malaysian Oil Palm Industry

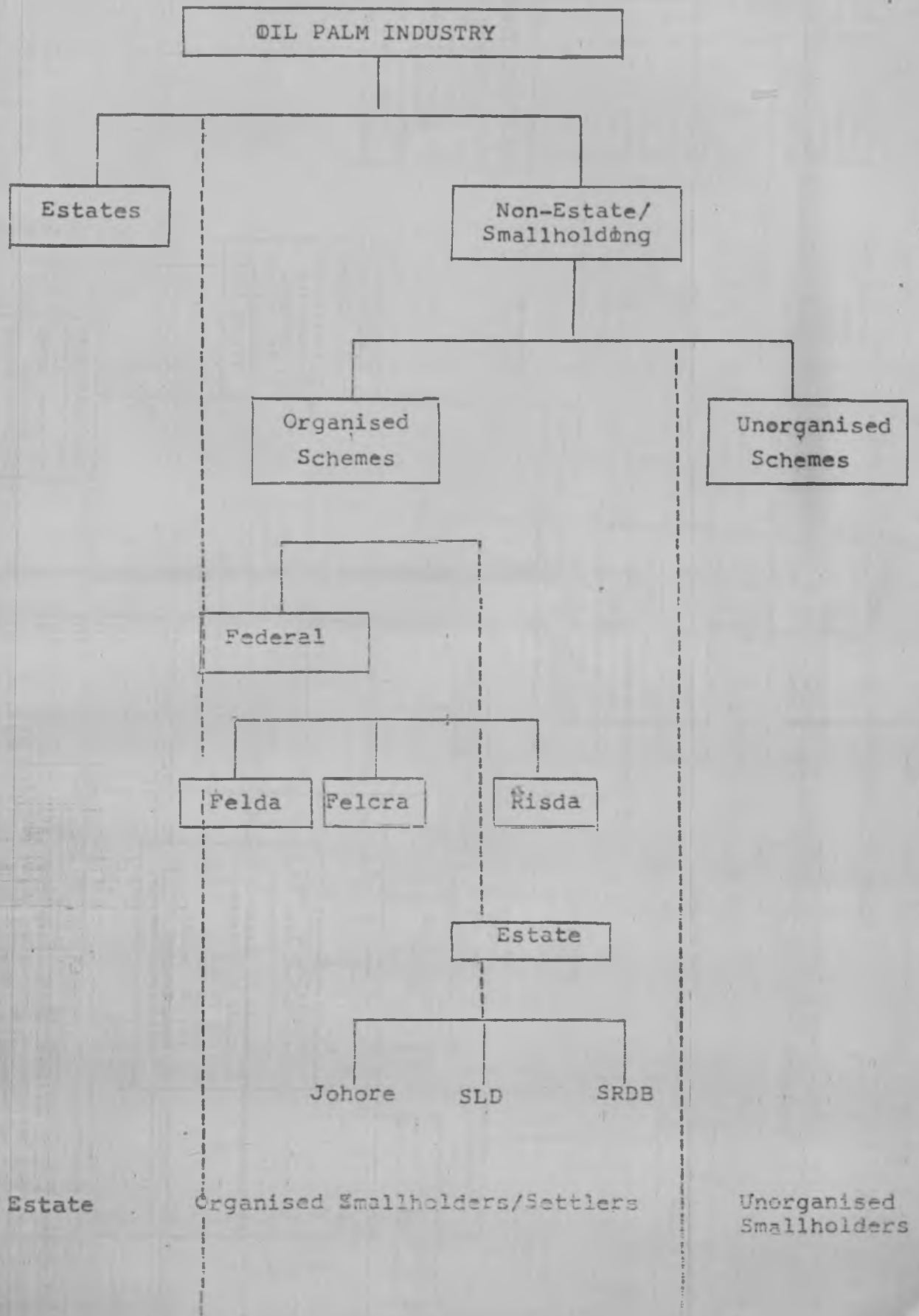
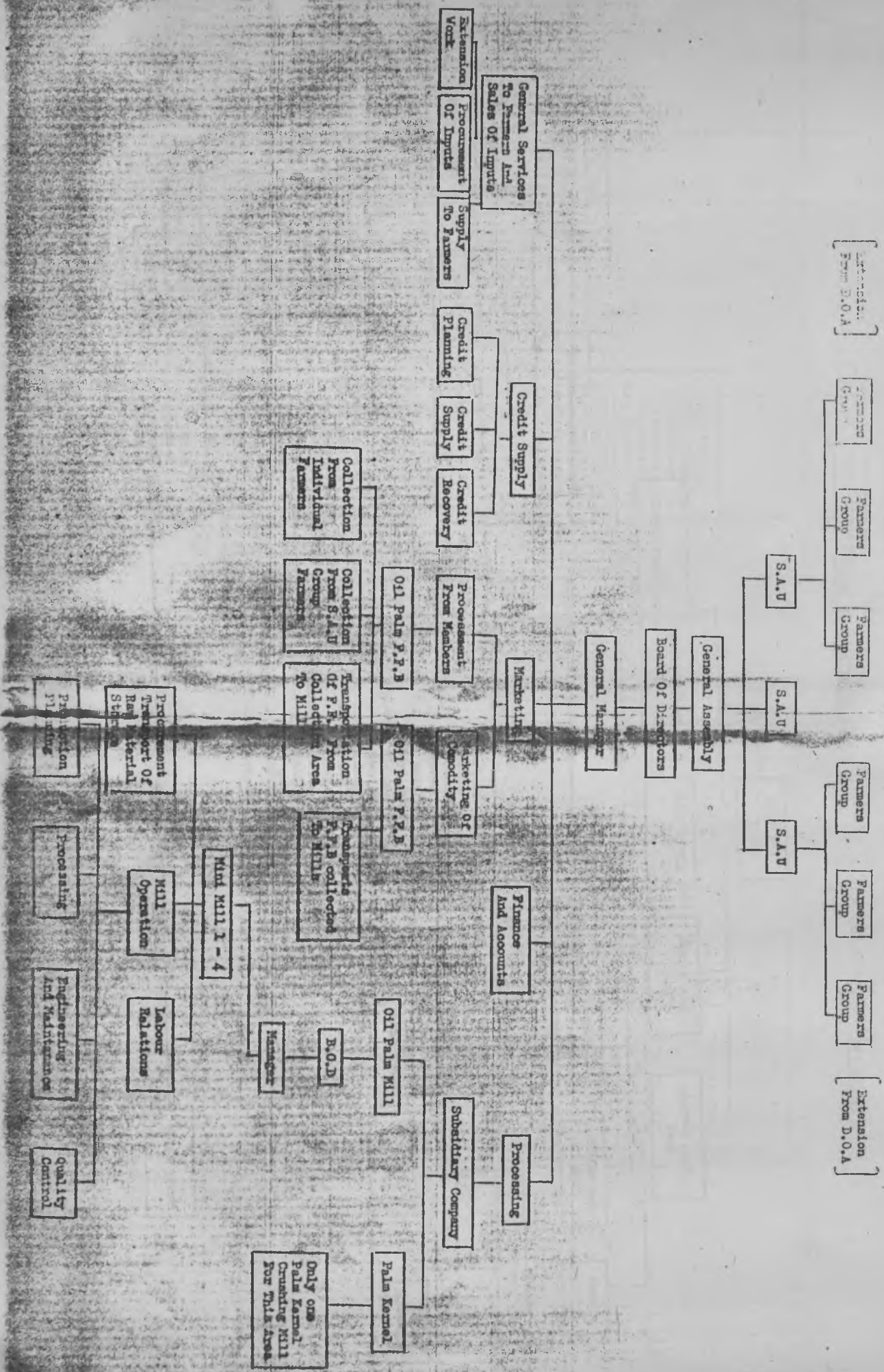


Figure (A) : Organization Chart for The A.P.O. of Kuala Lumpur



Variable Costs1. Raw Materials

FFB is purchased from the smallholders. To discourage any middleman activities, the mill would also provide transportation of FFB to the mill. The price of per tonne FFB paid to the farmers is worked on the following basis:

Selling price of oil	\$720 per tonne
Selling price of kernels	\$410 per tonne
Average transportation cost	\$ 10 per tonne
Processing fee	\$ 30 per tonne
Recovery rate (oil)	17%
Recovery rate (Kernel)	3.5%
... Purchase price of FFB (ex-farm)	= \$0.17 x 720 + \$0.035 x 410 - \$10 - \$30
	= \$122.40 + \$14.35 - \$40
	= \$ 96.75

It is therefore assumed that the purchase price of FFB (ex-farm) is \$96 per tonne. When processed, it is anticipated that the recovery rate of oil and kernel would be 19% and 16% respectively. Hence, the yearly FFB costs, oil and kernels produced is follows:-

- Mills are experiencing better recovery rate of kernel. This is due of the increase in the kernel size from the FFB.

Year	FFB Reqd(T)	Cost of FFB (\$)	Oil Produced (T)	Kernels Produced (T)
1	6300	604 800	1197.0	252.0
2	10 080	967 680	1915.2	403.2
3	11 520	1 05 920	2188.8	460.8
4	12 960	1 244 160	2462.4	518.4

2. Labour

As in the other case the no. of labourers required per shift is 12. The salary payable and 20% provision for EPF, SOCSO etc. is as follows:-

<u>Year</u>	<u>Rate/day (\$)</u>	<u>No. of Labourers</u>	<u>Yearly Salary (\$)</u>	<u>EPF, SOCSO etc.</u>
1	8	12	23 800	5760
2	10	18	68 000	12 000
3	12	18	72 000	14 400
4	14	18	84 000	16 800

3. Water, Fuel & Power

The same assumptions as in the other case applies. Below the relevant computations:-

a) Water Costs

<u>Year</u>	<u>FFB Processed(T)</u>	<u>Water Reqd(T)</u>	<u>Cost of Water/year(\$)</u>
1	6300	9450	945.00
2	10 080	15 120	1512.00
3	11 520	17 280	1728.00
4	12 960	19 440	1944.00

b) Diesel & Lube Oil

Because of the remote area, the cost of diesel/gallon is assumed to be higher and is inclusive of transportation charges.

c) Diesel Generator Set

<u>Year</u>	<u>Hours/ day</u>	<u>Diesel Req'd (gallon)</u>	<u>Cost/ Gallon(\$)</u>	<u>Diesel Cost(\$)</u>	<u>Lube Oil(\$)</u>	<u>Total Cost(\$)</u>
1	11	9504	2.70	25 660.80	1283.04	26 943.84
2	17	14 688	2.90	42 595.20	2129.76	44 724.96
3	17	14 688	3.10	45 532.80	2276.64	47 809.44
4	17	14 688	3.30	48 470.40	2423.52	50 893.92

4. Tractor

<u>Year</u>	<u>FFB/ day(T)</u>	<u>Trips/ day</u>	<u>Running Hours/year</u>	<u>Diesel Cost/yr.(\$)</u>	<u>Lube Oil (\$)</u>	<u>Total Cost(\$)</u>
1	21.00	6	1200.60	5843.92	291.75	6135.67
2	33.60	9	1800.90	9400.70	470.03	9870.73
3	38.40	10	2001.00	11 165.58	558.27	11 723.85
4	43.20	11	2201.10	13 074.53	653.72	13 728.25

The total cost of water, diesel & Lube oil is as shown table below:-

<u>Year</u>	<u>Water Cost(\$)</u>	<u>Gen.Set Cost(\$)</u>	<u>Tractor Cost(\$)</u>	<u>Total Cost(\$)</u>
1	945.00	26 943.84	6135.67	34 024.51
2	1512.00	44 724.96	9870.73	56 107.69
3	1728.00	47 809.44	11 723.85	61 261.29
4	1944.00	50 893.92	13 728.25	66 566.17

5. Consumable Stores

This is for the purchase of gunny sacks and chemicals for which \$16 per tonne of kernel and 10 cents per tonne of FFB is provided respectively. The full computation is as follow:-

<u>Year</u>	<u>Kernels(T)</u>	<u>Cost/ Tonne(\$)</u>	<u>Packaging Cost (\$)</u>	<u>Chemicals (\$)</u>	<u>Total Cost(\$)</u>
1	252	16	4032	630	4662
2	403	16	7254	1008	8262
3	460	20	9200	1152	10 352
4	518	22	11 896	1296	122692

6. Repairs and Maintenance

The estimate is 2% of cost of machinery and building for the first two years and 3% on the following two years.

$$\begin{aligned} \therefore \text{Year 1 and 2} &= \$0.02 (1011 + 74 + 60) \\ &= \$0.02 \times 1145 \times 1000 \\ &= \underline{\$22\ 900} \text{ per annum} \end{aligned}$$

$$\begin{aligned} \text{Year 3 and 4} &= \$0.03 \times 1145 \times 1000 \\ &= \underline{\$34\ 350} \text{ per annum} \end{aligned}$$

7. Factory Overhead

The staff involved and proposed salary is as follows:-

<u>Staff</u>	<u>Year 1(\$)</u>	<u>Year 2(\$)</u>	<u>Year 3(\$)</u>	<u>Year 4(\$)</u>
Mill Supervisor	1000	1100	1200	1300
Foreman	500	550	600	650
Tractor driver	350	400	450	500
Monthly total x 12	1850 x 12	2050 x 12	2250 x 12	2450 x 12
$\therefore$ Yearly Total	<u>22 200</u>	<u>124 600</u>	<u>27 000</u>	<u>29 400</u>
20% EPF, SOCSO, etc.	4440	4920	5400	5880

8. Selling Expenses

2% on sales of oil and kernels is provided:-

<u>Year</u>	<u>Oil (T)</u>	<u>Oil Sales(\$)</u>	<u>Kernel (T)</u>	<u>Kernel Sales(\$)</u>	<u>Total Sales(\$)</u>	<u>Selling Expenses(\$)</u>
1	1197	1 161 090	252	131 040	1 292 130	25 842
2	1915	1 857 550	403	209 560	2 067 110	41 342
3	2188	2 122 360	460	239 200	2 361 560	47 231
4	2462	2 388 140	518	269 360	2 657 500	53 150

9. Administration Overhead

This is made up of the administration on expenses and the EPF, SOCSO & etc. charges on labour costs and factory overheads. Administration overhead is made-up of the following :-

<u>Monthly Expenses</u>	<u>Year 1(\$)</u>	<u>Year 2(\$)</u>	<u>Year 3(\$)</u>	<u>Year 4(\$)</u>
Provision for visiting Eng.	500	500	500	500
Audit Fees	50	200	550	50
Travelling Expenses	200	200	350	400
Entertainment	150	250	300	350
Telephone/Wireless	100	150	150	200
Stationery	50	80	100	100
Legal Fees	100	100	100	100
Other	50	50	80	100
<b>∴ Monthly Expenses</b>	<u>1200</u> x 12	<u>1480</u> x 12	<u>1630</u> x 12	<u>1800</u> x 12
<b>Yearly Expenses</b>	<u>14 400</u> =====	<u>17 760</u> =====	<u>19 560</u> =====	<u>21 600</u> =====

The total administration overhead is as computed below:-

<u>Year</u>	<u>Labour(\$)</u>	<u>Factory(\$)</u>	<u>Admin. Expenses(\$)</u>	<u>Total Admin Overhead(\$)</u>
1	5760	4440	14 400	24 600
2	14 400	4920	17 760	37 080
3	17 280	5400	19 560	42 240
4	20 160	5880	21 600	47 640





7.C. MONTHLY CASH FLOW

				Malaysian Dollars\$
Year 1990	Cost	Revenue	Surplus	Cumulative
Month				
February	4,317.82	40,215.00	(1,102.82)	(1,102.82)
March	41,317.82	40,215.00	(1,102.82)	(1,102.82)
April	41,317.82	40,215.00	(1,102.82)	(1,102.82)
May	41,317.82	40,215.00	(1,102.82)	(1,102.82)
June	105,571.83	120,648.60	15,076.77	10,665.49
July	105,571.83	120,648.60	15,076.77	25,742.26
August	105,571.83	120,648.60	15,076.77	40,819.03
September	105,571.83	120,648.60	15,076.77	55,895.80
October	73,414.85	80,430.00	7,015.00	62,910.80
November	73,414.85	80,430.00	7,015.00	69,925.80
December	73,414.85	80,430.00	7,015.00	76,940.80
January	73,414.85	80,430.00	7,015.00	83,915.80

Appendix II (c)

REVENUE FOR 1990, Monthwise

Month	Total FFB processed tonne	19% recovery rate of oil produced at \$ 720 tonne		4% recovery rate of kernals at \$ 410 tonne		Total Revenue
		M	\$	M	\$	
February	262.5	35,910		4,305		40,125.00
March	262.5	35,910		4,305		40,125.00
April	262.5	35,910		4,305		40,125.00
May	262.5	35,910		4,305		40,125.00
June	787.5	107,733.60		12,915		120,648.60
July	787.5	107,733.60		12,915		120,648.60
August	787.50	107,733.60		12,915.00		120,648.60
September	787.50	107,733.60		12,915		120,648.60
October	525	71,820.00		8,610		80,430
November	525	71,820		8,610		80,430
December	525	71,820		8,610		80,430
January	525	71,820		8,610		80,430

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Computation of IRR

Year	Present Worth	Discount Factor 15%	NPV	Discount Factor 25%	NPV
0	(1390)	1.000	(1390)	1.000	(1380)
1	140	0.869	121.6	0.800	112
2	265	0.756	163	0.640	138
3	293	0.657	193	0.512	150
4	333	0.571	190	0.410	137
5	333	0.497	165	0.328	109
6	333	0.432	144	0.262	87
7	333	0.375	125	0.210	70
8	333	0.326	108	0.168	56
9	333	0.284	95	0.134	45
10	333	0.247	82	0.107	36
11	333	0.214	71	0.086	29
12	333	0.186	62	0.069	23
13	333	0.162	54	0.055	18
14	333	0.141	47	0.044	15
15	333	0.122	41	0.035	12
16	333	0.106	35	0.028	9
17	333	0.093	31	0.023	8
18	333	0.080	27	0.018	6
19	333	0.070	23	0.014	5
20	333	0.060	20	0.012	4
21	333	0.053	18	0.009	3
22	333	0.046	15	0.007	2
23	333	0.040	13	0.006	2
24	333	0.034	11	0.005	2

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Appendix II (c)

REVENUE FOR 1990, Monthwise

Month	Total FFB processed tonne	19% recovery rate of oil produced at \$ 720 tonne		4% recovery rate of kernals at \$ 410 tonne		Total Revenue	
		M	\$	M	\$	M	\$
February	262.5		35,910		4,305		40,125.00
March	262.5		35,910		4,305		40,125.00
April	262.5		35,910		4,305		40,125.00
May	262.5		35,910		4,305		40,125.00
June	787.5		107,733.60		12,915		120,648.60
July	787.5		107,733.60		12,915		120,648.60
August	787.5		107,733.60		12,915.00		120,648.60
September	787.5		107,733.60		12,915		120,648.60
October	525		71,820.00		8,610		80,430
November	525		71,820		8,610		80,430
December	525		71,820		8,610		80,430
January	525		71,820		8,610		80,430

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Computation of IRR

<u>Year</u>	<u>Present Worth</u>	<u>Discount Factor</u> <u>15%</u>	<u>NPV</u>	<u>Discount Factor</u> <u>25%</u>	<u>NPV</u>
0	(1390)	1.000	(1390)	1.000	(1380)
1	140	0.869	121.6	0.800	112
2	265	0.756	163	0.640	138
3	293	0.657	193	0.512	150
4	333	0.571	190	0.410	137
5	333	0.497	165	0.328	109
6	333	0.432	144	0.262	87
7	333	0.375	125	0.210	70
8	333	0.326	108	0.168	56
9	333	0.284	95	0.134	45
10	333	0.247	82	0.107	36
11	333	0.214	71	0.086	29
12	333	0.186	62	0.069	23
13	333	0.162	54	0.055	18
14	333	0.141	47	0.044	15
15	333	0.122	41	0.035	12
16	333	0.106	35	0.028	9
17	333	0.093	31	0.023	8
18	333	0.080	27	0.018	6
19	333	0.070	23	0.014	5
20	333	0.060	20	0.012	4
21	333	0.053	18	0.009	3
22	333	0.046	15	0.007	2
23	333	0.040	13	0.006	2
24	333	0.034	11	0.005	2

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INTEREST

Proposed Loan : \$900 000  
 Interest Rate : 11.5% yearly rest  
 Repayment : 12 half yearly instalments  
 Grace Period : 1 year

Therefore, the repayment for the loan is as follows:-

<u>Year</u>	<u>Interest \$(000's)</u>	<u>Capital \$(000's)</u>	<u>Yearly Repayment \$(000's)</u>
1	104	-	104
2	104	112	216
3	91	125	216
4	76	140	216
5	60	156	216
6	42	174	216
7	22	194	216

Note:

- i) the figures are rounded to the nearest \$1000
- ii) the short term interest is due to working capital requirements of \$110.000 at 13.0% per annum.

Depreciation

The depreciation of assets is based on the following schedules:-

<u>Item</u>	<u>Rate of Depreciation/Year</u>	<u>Cost of Item (\$)</u>	<u>Depreciation(\$)</u>
Plant & Machonery	10%	1 011 000	101 100
Building	5%	74 000	3700
Tractor	20%	60 000	12 000
Furniture & Office equipment	20%	10 000	2000
Total Depreciation			118 800

3TPH MINI PALM OIL MILLCOST OF PRODUCTION AND PROFITABILITY STATEMENT

( In Thousands of Malaysian Ringgit )

Year Ending		<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Production (In tonnes)	FFB	5300	10 080	11 520	12 960
	Oil	1197	1915	2188	2462
	Kernels	252	403	460	518
Percentage of rated capacity		<u>70</u>	<u>70</u>	<u>80</u>	<u>90</u>
Raw Materials (\$96 per tonne ex-farm)		604	967	1105	1244
Labour		29	50	72	84
Water, fuel and lube oil		34	56	61	67
Consumable stores		5	8	10	13
Repairs and maintenance		23	23	34	34
Factory overheads		23	25	27	30
Selling expenses		26	41	47	53
Administration overheads		25	37	42	48
Interest - Long-term		104	104	91	76
- Short-term		15	-	-	-
Depreciation		119	119	119	119
		<u>1007</u>	<u>1440</u>	<u>1608</u>	<u>1768</u>
Sales		<u>965</u>	<u>1544</u>	<u>1762</u>	<u>1985</u>
Operating Profits		<u>(42)</u>	<u>104</u>	<u>154</u>	<u>217</u>
Return on equity %		-	17.9	26.5	37.
Return on total investment %		-	6.9	10.3	14.
Cash generation (\$1000)		77	223	273	336

\* One 10hr shift/day operation only.

$$ROI = \left( \frac{\text{Total Income}}{\text{Total Expenses}} \right) - 1 \times 100$$



Computation of Working Capital \$(000's) Malaysian

	<u>Period</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Raw Materials	1 day	3	5	6	7
Week in Programs	1 day	4	6	6	7
Finished goods	2 weeks	39	63	72	81
Consumable Spares	1 month	1	1	1	1
Trade debtions	2 weeks	46	80	91	102
Working Expenses	1 month	23	31	33	35
		116	186	209	233
<u>Less</u>					
Trade Credit 2 days		6	10	2	13
∴ Working Capital		110	117	197	220

7) a) Calculation of working Capital and margin money. Pg 86 (11)

Appendix VII (b)

Assumption: Price of raw materials, finished goods remains stable through out the period months.

Year Month	Requirement (Quint)	Procurement cost (\$/qum)	Establishment cost	Labour cost	Controllable cost (\$0.74/qum)	Water/Fuel (Gallon/hr)	Maintenance	Selling Expenses (\$/qum)	Carrying (\$/qum)	Total	Interest 11%	Total cost
1) FEB.	262.5	\$25,200	\$3980.	\$2400	\$207.38	\$1417.5	\$1900	\$1076.25	\$1942.13	\$31203.56	\$4094.56	\$41,217.82
2) MARCH	262.5	\$25,200	\$3580	\$2400	\$207.38	\$1417.5	\$1900	\$1076.25	\$1942.13	\$37,223.26	\$4094.56	\$41,217.82
3) APRIL	262.5	\$25,200	\$3980	\$2400	\$207.38	\$1417.5	\$1900	\$1076.25	\$1942.13	\$37,223.26	\$4094.56	\$41,217.82
4) MAY	262.5	\$25,200	\$3980	\$2400	\$207.38	\$1417.5	\$1900	\$1076.25	\$1942.13	\$37,223.26	\$4094.56	\$41,217.82
5) JUN	787.5	\$75,600	\$3980	\$2400	\$622.13	\$4252.5	\$1900	\$3228.75	\$3066.38	\$51099.76	\$10462.07	\$105,571.83
6) JULY	787.5	\$75,600	\$3980	\$2400	\$622.13	\$4252.5	\$1900	\$3228.75	\$3066.38	\$51099.76	\$10462.07	\$105,571.83
7) AUGUST	787.5	\$75,600	\$3980	\$2400	\$622.13	\$4252.5	\$1900	\$3228.75	\$3066.38	\$51099.76	\$10462.07	\$105,571.83
8) SEPT.	787.5	\$75,600	\$3980	\$2400	\$622.13	\$4252.5	\$1900	\$3228.75	\$3066.38	\$51099.76	\$10462.07	\$105,571.83
9) OCT.	525	\$50,400	\$3980	\$2400	\$414.75	\$2835	\$1900	\$2152.5	\$2084.25	\$37235.35	\$4735.35	\$42,414.85
10) NOV.	525	\$50,400	\$3980	\$2400	\$414.75	\$2835	\$1900	\$2152.5	\$2084.25	\$37235.35	\$4735.35	\$42,414.85
11) DIS	525	\$50,400	\$3980	\$2400	\$414.75	\$2835	\$1900	\$2152.5	\$2084.25	\$37235.35	\$4735.35	\$42,414.85
12) JAN.	525	\$50,400	\$3980	\$2400	\$414.75	\$2835	\$1900	\$2152.5	\$2084.25	\$37235.35	\$4735.35	\$42,414.85

Assumptions: Price of raw material is taken as \$896.00 per quint. Price of finished goods is taken as \$1000 per quint. For every period of 5 years.

Total investment for working Capital for one year is \$8,12,180.00.

Margin money is 20% of total requirement = \$1,62,436.60

Loan require from Financial Institution = \$7,04,974.4

### Working Capital and Margin Mondy:

With reference to Table VII a , the working capital requirement will be M \$ 881,218.00 for the first year, the Agricultural Bank of Malaysia is expected to finance \$ 704,974.40 and remaining amount of \$ 176,243 .60 will be contributed by member farmers of the society, in a phased manner approximately \$44,000 per annum before the commencement of the project in 1990. The contributions from member farmers will be made by promotion and explaining them the benefits of the coming up of the processing plant and price stabilisation. If at all any deficit, this will be made up by government assistance and at soft rate of interest.

The details of working capital and margin money are all given in table 7.a. Through the working capital at a time would be \$ 105,171.93 still 10% receivables are expected. Therefore at a time working capital requirements would be M\$ 116,129.01 but to be conservative, the working capital the entire year has been calculated on cost front.

ITEMISED COST FOR MINI PALM OIL MILL(CAPACITY 2.5 AND 5.0 TONS FFB/HR)PRICES IN MALAYSIAN RINGGIT

STATION AND MACHINERY	INITIAL 2.5 TONS/HR	ADDITION FOR 5.0 TONS/HR	TOTAL AMOUNT
Reception area	\$ 16,000	\$ 12,000	\$ 28,000
Sterilising Station	66,000	52,500	118,500
Threshing Station	115,000	-	115,000
Pressing Station	127,500	97,500	225,000
Depericarping Station	39,500	-	39,500
Kernel Recovery Station	50,000	-	50,000
Clarification Station	59,500	-	59,500
Steam, and power plant	196,500	116,000	312,500
Piping, valves, fittings and insulation	37,500	12,000	49,500
Buildings	56,500	-	56,500
Other Items	36,000	10,000	46,000
	\$ 800,000	\$ 300,000	\$1,100,000

OWNER'S COSTS - These are estimates only, may vary depending on location and conditions at site	INITIAL 2.5 TONS/HR	ADDITION FOR 5.0 TONS/HR	TOTAL AMOUNT
Highbridge, installed	\$ 70,000	\$ -	\$ 70,000
Civil works (80m <sup>3</sup> x \$280)	22,400	-	22,400
Office cum store	12,000	-	12,000
Toilet with shower	4,000	-	4,000
Fencing and gates (approx. 240 m run)	3,000	-	3,000
Site preparation (600m <sup>3</sup> x \$7.50) say	4,600	-	4,600
Drainage (200m x \$20)	4,000	-	4,000
Total	\$ 120,000	-	\$ 120,000

1. PRICES ARE SUBJECT TO REVISION WITHOUT NOTICE  
The prices Quoted above are for delivery to sites in West Malaysia, and FOB Port Kelang for export to East Malaysia and Overseas.
2. CLIENTS WILL BE CHARGED REASONABLE COSTS FOR TRANSPORTING THE EQUIPMENT TO SITE AND FOR THE ERECTION BY CONTRACTOR.

CHD. Eng. Sdn. Bhd.  
PERTAMECH Sdn. Bhd.  
January, 1983.

40

Literative Review

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FIRST

ICA TRAINING COURSE FOR STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA

NEW DELHI / BANGKOK / TOKYO / SEOUL

1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

Project Title: Project Study of Marketing of Palay  
(Paddy) for Baras Baras SN, Tarlac  
Country: Philippines  
Prepared by: Mr Ceasar Alcantara

Funded by the Government of Japan  
and  
Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.





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PROJECT STUDY OF MARKETING (PALAY TRADING)

FOR BARAS-BARAS SN, TARLAC, TARLAC

---

By

CESAR ALCANTARA  
Proponent

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## INTRODUCTION

In my studies of Agricultural Cooperative Management in India and Thailand is really a great task to achieve the true meanings of Agricultural Cooperative Management. It is centered on the theory and practices of Agricultural Cooperatives Management which are relevant and applicable to Agricultural cooperation in developing countries. It is precisely directed towards practitioners, such as Cooperative Extension Officers and Managers of Cooperative Rural Banks and Area Marketing Cooperatives.

In this respect, I would like to extend my full hearted thanks to Atty. Ambrocio Lumibao who nominated me as one of the participants to the ICA, Training Course for Strengthening Agricultural Cooperative Management in the South East Asia, and also the Cooperative Union of the Philippines, Inc. (CUP) headed by Gen. Arcadio S. Lozada, CUP President, who sponsored me as well as the ICA Regional Director, Mr. R.B. Rajaguru who accepted my nomination to participate in the training proper. Likewise, I also extend my full appreciation and thanks to the good Professors of the Indian Institute of Management, V.K. Gupta, V.R. Gaikwad, D.R. Oza, Mr. M.L. Ikwadia and the ICA Programme Coordinator Mr. M.V. Madane for their very enlightening lectures they had rendered to the participants and also their full cooperations and guidances served during the whole period.

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With the exemplary system of management and disciplined of members, I have chosen this SN as my pilot project. Likewise I congratulate all the members, the officers and staff who rendered efforts and sacrifices for the success and growth of this Samahang Nayan.

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cfc/

PROJECT STUDY OF MARKETING (PALAY TRADING) FOR BARAS-  
BARAS SN, TARLAC, TARLAC

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I GENERAL INFORMATION (Background) -

A. Description of the Samahang Nayon

The name of the project is Baras-Baras SN, Tarlac, Tarlac. The total member of households is 150 and the total population is 990. There is one (1) elementary school with an enrollment of 383 children, one (1) Rural Health Center, one (1) Basketball Court for athletic competitions and other recreational activities. There is also health programs in the barrio which is the nutrition program and family planning.

The total areas planted to rice is 131 hectares breakdown as follows: 1. Irrigated area is 15 ~~has.~~ and none irrigated areas 115 hectares with an average production of 70 cavans per hectare and with a pasture land of 100 ~~has.~~ and as to the farm tenure, for land owner 70 farmers, with an average landholding of 1.5 ~~has.~~ The total number of farmers who planted rice is 80.

The Samahang Nayon was organized in 1973 and duly registered with the BCOD on Sept. 17, 1975. It has a total membership of 118 active farmer members. It was also a recipient of provincial award for the year 1980 as one of the most outstanding SN in the province of Tarlac (See attached Certificate of Award).

Baras-Baras SN, has been one of the Pilot Areas Project of the (SNSP) Samahang Nayon Support Project in Tarlac since 1980. The economic activity undertaken with the SNSP was multi-purpose warehouse with one unit electric mill with a milling capacity of

200 cavans every 24 hours. Since the SN has been engaged in other economic activities such as loaning and marketing (palay trading) although these activities were done in small scale, the SN feels that it can better serve its members if its capital for economic activity were increased.

#### B. Location

Baras-Baras SN is located at the Western part of the Provincial Capital of Tarlac along the national road (Romulo Avenue) about 7 kilometers away from the Provincial capital. Transportation are available at all times, thus farmer-members and non-members of the SN can easily transport and transact business with the SN.

#### 2.2 Area of Project

Baras-Baras SN has a total land area of 230 hectares breakdown as follows:

- a. For palay 130 hes. planted to rice with an average production of 70 cavans per hectare and a total production of 9,100 cavans.
- b. For pasture and ranch land 100 hes.
- c. For irrigated areas 15 hectares with an average production of 65 cavans per hectare and with a total production of 1,075 cavans.
- d. For non irrigated areas 15 hectares with an average production of 65 cavans per hectare.

These areas usually planted to rice except the pasture land which the members utilized for pasturing during the rainy seasons. Rice is only affected when typhoon comes, and drought occurs, pest and diseases are not a serious problems of the farmers due to



government personnel assistance. Some areas remain idle during the dry season due to lack of irrigation system.

2.3 Problems faces by the farmers

1. Farmers have a very limited income due to lack of irrigation facilities;
2. There was no strong support by the government for the construction of irrigation canals to double the production of SN members a year;
3. Majority of the SN members lack the proper education and technical know how about the modern technology on farming;
4. Lack of infrastructure development;
5. Lack of appropriate financial support from the government; and
6. Lack of transportation facilities for hauling members' produce for better marketing with the NFA.

2.4 Need and Justification for the Project

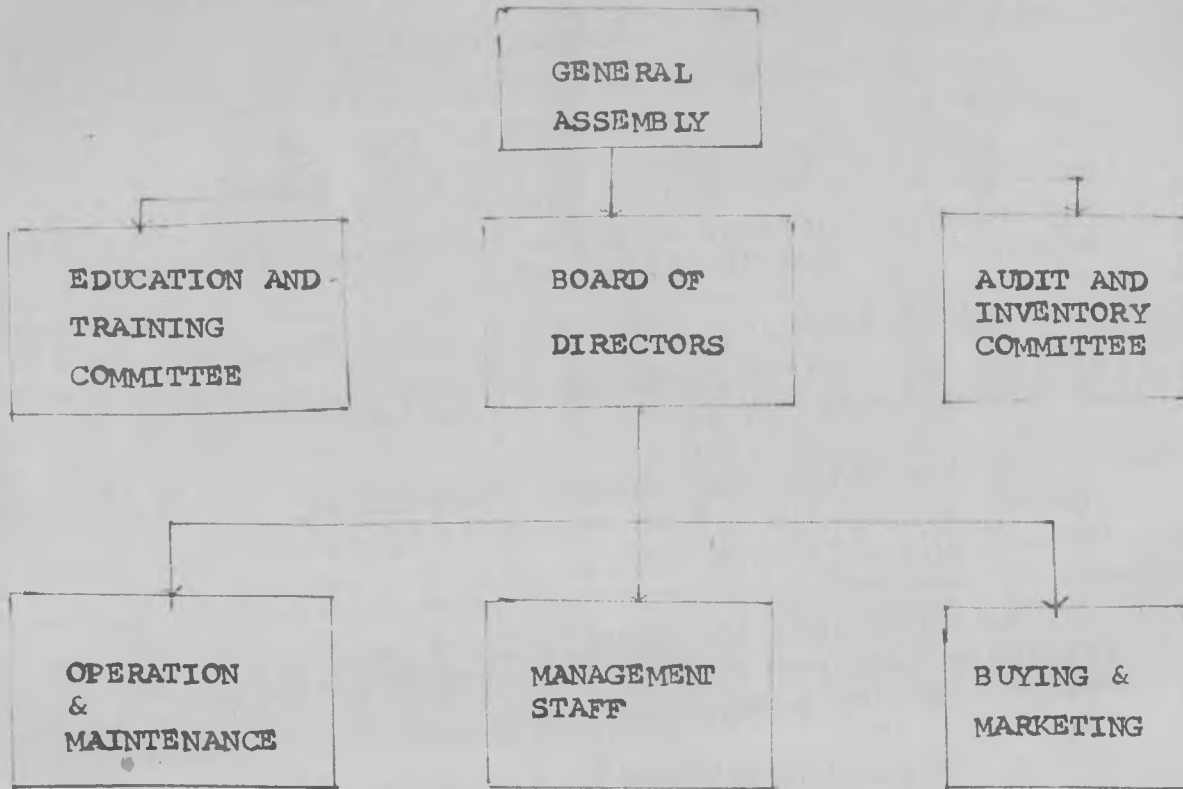
a. Projected volume of business - Out of the P75,000.00 capital, the SN is expected to purchase 555 cavans or 27,750 kilos fresh palay for the first crop and 632 cavans 31,600 kilos of fresh palay. For the second crop, this gives a gross income of P29,675.00 on the first year of operation and P32,716.69 on the 3rd year.

b. Financial Aspects

a. The Project Cost - For the first year of operation, project costs total to P95,427.50 broken down as follows:

1. Capital	P 75,000.00
2. Pages	18,750.00
3. Miscellaneous	<u>1,687.00</u>
	P 95,427.50
	vvvvvvvvvvvvvv

ORGANISATIONAL CHART



g. Social Desirability -- One of the benefit which the farmers will derive on this project is that the transportation expenses will be out. The farmers will just use their carts to transport their produce from the farm to the multi-purpose warehouse. Second is that the farmers can be assured of reasonable prices.

## 2.2 Area of Operation

The area of operation is within the Barangay Baras-Baras-SN, and adjacent barangays. The business activities contemplated is selling and buying of farm inputs and farm produce. The field of membership qualifications shall be SN members of the Baras-Baras SN and membership potential 100% are in good standing in their SN Association. The availability of manpower and management of cooperative on the operation of the SN, lies on the management staff that had undergone trainings or seminars on marketing cooperatives.

## 2.3 Project Components

- a. Buying of palay;
- b. Marketing of palay;
- c. Milling; and
- d. Extending of loan to members.

a. Buying of Palay - In as much as the SN has a warehouse with a capacity of 500 cavans, one of their economic activities is buying of palay from its members, and non-members at ₱2.70 per kilo. This activity is usually done after the harvesting season wherein the members sell their produce to the SN to pay for their loans.

b. Marketing of Palay - The SN usually market the produce of its members to the National Food Authority (NFA) which is about 10 kilometers away from the Baras-Baras SN warehouse. The NFA price is ₱3.50 per kilo in good quality, dried in line with the Standard Moisture content. Aside from this, NFA gives also incentive assemblage fee to SN members at two (.02) centavos per kilo. These two (.02) centavos per kilo will go to the SN, accredited to individual members of the SN. With this amount, the SN can utilize it for buying post-harvest facilities only, as regulated by NFA it can not be utilize to other purposes. For every 50 kilos of palay sold the SN has an income of ₱10.00 or .20 centavos per-kilo.

3. The Vice-President and the Education and Training Committee shall conduct additional pre-membership education for those who wish to join the SN. At this time, the SN may request the services of the Ministry of Agriculture and Food personnel for pre-membership training but at the expense of the SN;

4. The Vice-President and the Education and Training Committee shall be responsible for planning, arranging and implementing the continuing education program of the SN;

5. The Education and Training Committee shall be responsible for choosing 2 to 5 Agricultural Counsellors to be trained;

6. The Education and Training Committee shall maintain records of all membership education sessions;

7. The Education and Training Committee shall keep a record of the minutes of all of its formal meetings on the appropriate forms;

8. The Education and Training Committee shall participate actively in the campaign for additional members and for assistance in the forms of school facilities, financing and manpower;

9. The Education and Training Committee shall establish a message center such as billboards, blackboards, courier system and etc.;

10. The Vice-President shall have custody of all training and information materials allotted to the SN. He shall sign all documents required as evidence of his having received these materials. He shall personally maintain an inventory of these materials;

11. The Vice-President shall institute and maintain the practice of regular evaluation meetings for the committee, whether formal or informal to assess the progress of the overall educational campaign, the assignments of individual committee members and performance at the most recent education session;

12. In coordination with the president and the secretary-treasurer, the Vice-President shall draft a budget for education and training work with a plan for continuing membership education flexible to accommodate further requirements of the BCOB;

13. The Vice-President shall confer with members of other SN to discuss the potentials of combined membership education meetings, specially if community interest or materials are deficient; and

14. The Vice-President shall record the minutes of the meetings of the Board of General Assembly in case the Secretary-Treasurer is absent;

d. Functions of the Secretary-Treasurer

1. The Secretary-Treasurer will receive, keep and secure all assets, especially funds, received by the SN and will issue the corresponding receipts. The Secretary-Treasurer will also disburse necessary from the various funds of the SN but only upon receipt of a property accomplished Cash release order and shall secure the corresponding disbursement voucher;

2. The Secretary-Treasurer shall personally be accountable for all collections and assets of the SN. He will monitor the 3% automatic savings and collect the (P5.00) monthly savings of non-farmer members;

3. As keeper of the SN's assets, the Sec-Treasurer shall open an account in the name of the SN at the nearest rural bank designated by the Board of Directors. He shall be one of the signatories of this account. He may not make any withdrawals from this account within the Board's approval;

4. The Sec-Treasurer will also maintain books of accounts of all SN transactions and records of members' individual contributions to the various savings funds. After each prescribed collection period, the Sec-Treasurer shall submit to the President on list of all members with outstanding financial obligations, for the purpose of imposing the corresponding sanctions;

5. The Sec-Treasurer shall keep the minutes of all meetings of the Board and the General Assembly. In his absence the Vice-President shall record the minutes;

6. The Sec-Treasurer shall work in close coordination with the management of SN with respect to deposits for the (BGF) Barangay Guarantee Fund and conversion of deposits in kind into cash equivalents;

7. The Sec-Treasurer shall allow the Auditor and members of the Audit and Inventory Committee to inspect the books of accounts and documents of transaction at any time during office hours; and

8. The Sec-Treasurer shall prepare a monthly financial report of the SN for submission to the Board and the BCOD;

This report shall state amounts received, amounts disbursed, amounts receivable and the balance of SN funds in bank and/or on hand.

e. Functions of the Manager and the Finance and Development Committee -

1. The Manager of the SN will be responsible for securing the most advantageous prices for members and will directly supervise projects such as demonstration projects and the take-over of management of a member's farm;

2. The Manager will be directly responsible to the President and the General Assembly for the performance of the Finance and Development Committee;

3. The Manager will canvass for the most advantageous prices for members, either securing supplies or selling produce. He shall inform the Board immediately of the alternatives and his recommendations so that official selection by the Board can take place;

4. After such canvassing or selling period he shall prepare a list of all members who failed to comply with the official Board designation of authorized supplier or buyer and shall refer this to the Board for action;

5. The Manager shall initiate talks with Managers of adjacent associations for the purpose of establishing guidelines that will strengthen the bargaining power of the various SN, standardization of crops, pooled stocks and conduct of biddings, through the Education and Training Committee shall acquaint the members with the benefits derived from uniform and united operations of SN;

6. The Manager shall personally supervise or delegate to another, with permission of the Board the management of farm threatened by force majeure. The

Manager shall also personally supervise the establishment of demonstration projects for fertilizer use, insecticide use, hog-raising and poultry-raising;

7. The Manager shall prepare accurate financial statements of operations at the close of each project for submission to the Board, to farmer-members or other interested parties. These statements must be kept as part of the records of the Finance and Development Committee;

8. The Finance and Development Committees shall maintain records of the minutes of its formal meetings;

9. The Manager shall be responsible for collecting the contributions to the (BGF) Barrio Guarantee Fund and he shall coordinate closely with the Sec-Treasurer especially with respect to BGF contributions. He shall personally maintain a record of the collections. He shall personally be liable for the cash equivalent of deposits in kind until he turns over the amount to the Sec-Treasurer. He shall give the Sec-Treasurer a copy of his records;

10. The Manager shall institute the holding of regular meetings of the Finance and Development Committee for the purpose of securing immediate feedback on SN projects and ensuring the productivity of Committee members; and

11. The Manager shall assign, if necessary, one or both members of the Finance and Development Committee to learn bookkeeping from the Sec-Treasurer.

f. Functions of the Auditor and the Audit and Inventory Committee -

1. The Auditor of the SN is responsible for safeguarding the trust invested by members of the SN in their Sec-Treasurer and Manager. The Auditor undertake a monthly check of the assets books of accounts and records in the possession of the Sec-Treasurer. The Auditor also undertakes a monthly check on the projects and operations handled by the Manager, especially the BGF deposits and the management of farms;

2. The Auditor will independently submit to the General Assembly, through the President, his findings, regarding the assets and financial operations of the SN. The Audit of the Sec-Treasurer's or Manager's report may be indicated by a short statement to this effect signed by the Auditor on the report itself. The Auditor and Inventory Committee shall maintain records of audit reports;

3. The Auditor shall report all anomalies detected to the board and the field workers;

4. The Auditor is personally answerable to the General Assembly and the President for the performance of the Audit and Inventory Committee;

5. The Audit and Inventory Committee will maintain records of minutes of its formal meetings;

6. The Auditor shall evaluate any and all proposed budgets on the basis of past audit reports; and

In budget preparation, the Auditor becomes responsible for eliminating unnecessary or overstated expenditures.

7. In the absence of the Sec-Treasurer, custody of SN assets and handling of books of accounts and records of contributions shall fall automatically to the Manager.

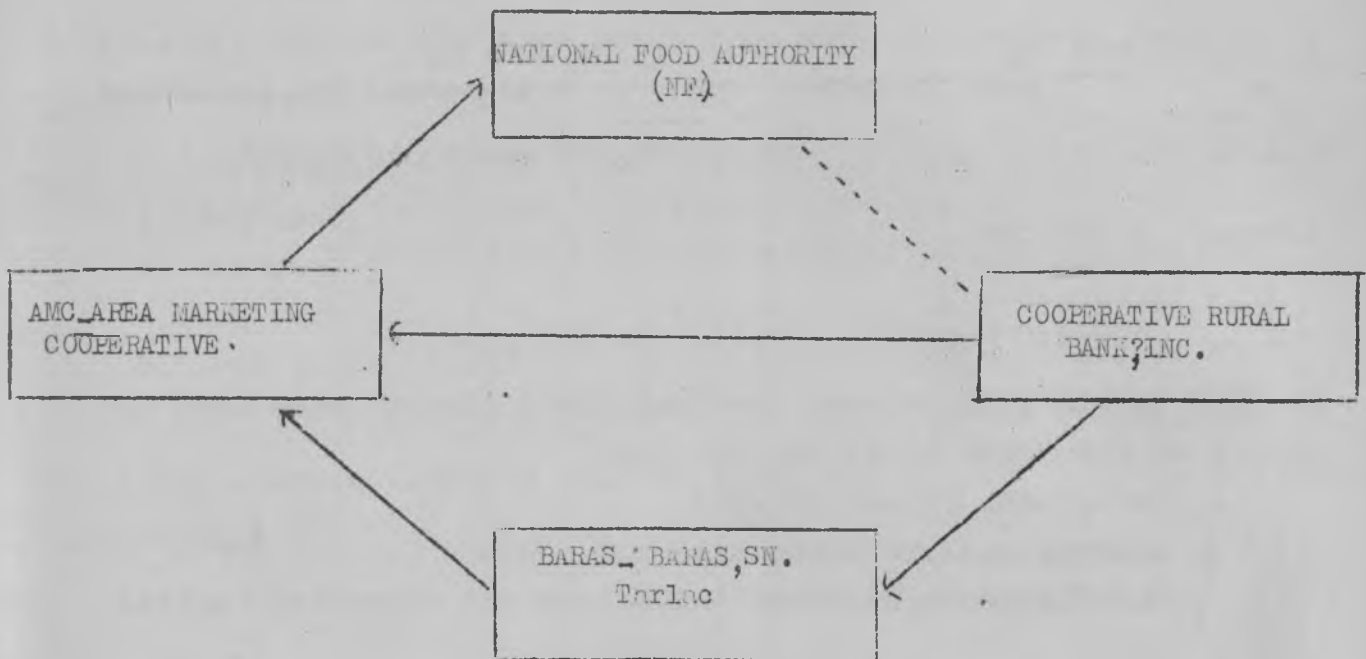
### III.β-CH-7 BUDGET

The Management Committee composed of the SN Board of Directors will supervise the project. The SN manager and one hired laborer will take care of the daily activities of the project.

The Management Committee will receive 5% of the gross income while the SN Manager and the hired laborer will receive also 20% of the gross income for the whole year.



ORGANIZATIONAL LINKAGES WITH AMC, ~~AND~~ CRB, NFA  
AT THE PROVINCIAL LEVEL



Their Relationships -

1. The CRB will serve as the financing arm of the SN;
2. The AMC will serve as the marketing arm of the SN;
3. The SN will serve as the production arm of the AMC;

and

4. The NFA is the Central Marketing of all SNs members in the province of Tarlac, in the sense that it gives support price to palay harvest every year for the protection of farmers in terms of selling/marketing their produced.

IV RECOMMENDATION -

Since that Baras-Baras SN has a total of 118 farmers with an average land holding of 1.5 hectares with an average yield of 80 cavans per hectare which make a total production of 14,600 cavans a year plus 11,500 cavans from neighboring barangays this makes 26,100 cavans a year with a net income of:

Conversion from Cavan to Kilograms. 50 kgs is = one cavan of paddy.

1.	26,100	cavan		1,305,000	kg
	x	50	KG	x	3.50
					peso per kg NFA price
					-----
				P	4,567,500
					1,305,000 kg.

2.	1,305,000	kg		1,305,000	kg
	x	2.70	peso SN Price	x	0.02
					peso: NFA incentive
					-----
P				P	26,100
					pesos per output.
					P 3,523,500

3.	Peso	4,567,500
	-	3,523,500
		-----
		1,044,000

1,044,000 pesos. Sales for one year.

To find out the net income, subtract the following items from the volume of the gross sales for one year.

1. Management committee - 5%
2. Manager and one hired labourer - 20%
3. Miscellaneous expenses - 10% from the operating capital.

1.	Pesos	1,044,000		2.	P	991,800
	x	0.5			x	.20
		-----				-----
	P	52,200	Managing Committee.	P	198,360	Manager and one hired labour.

3.	P	150,000	- operating capital
	x	0.10	
		-----	
	P	15,000	Miscellaneous expenses.

To summarise:

1.	P	52,200	for management committee
	P	198,360	for manager and labour
	P	15,000	for misc expenses.
		-----	
		265,560	total expenses for the whole year business operations.

To find out the net income for the whole year after deducting the above expenses:

P.	793,440	gross sales
P	- 265,560	total expenses
	-----	
P	527,880	total net income for one year
+	26,100	incentive fee
	-----	
	553,980	total net savings for one year or P 46165 p.m.

The expected total net savings is amounting to P 553,980 for one year of its business operations for buying and selling of palay (paddy) of its members.

Based on the computations made as analysed, the expected net savings for the project five years plan with 5% increase is amounting to Pesos 2,512,842.59.

1. first year	1988	P 553,980	x .05=	P 581,679.00
2. 2nd year	1989	581679	x .05 =	2 610,762.95
3. 3rd year	1990	610,762.95	x .05 =	641,301.10
4. 4th year	1991	641,301.10	x .05 =	673,366.16
5. 5th year	1992	673,366.16	x .05 =	707,034.47
				2,572,842.59
			Pesos	2,572,842.59

The total average income a year is P 514,568.51 or P 42,880.71 a month.

ADDING VALUE -

A. Assumptions: (For buying and marketing/selling)

1. Double the projected volume of business;
2. For every 50 kilos of palay the net income is P10.00
3. Double the capitalization of the SN - 1st year.
  - a. SN capital is P150,000.00
  - b. Expected purchase is 1,110 cavans or 55,500 kilos.
  - c. Buying price of SN P2.70 per kilo
  - d. Selling price is P3.50/kilo NFA with .02 centavos per kilo as incentive fee.

a. 55,500 - kilos  
 x 2.70 - SN Price/kilo  
 P149,850.00 - total expenses for the purchase of 55,500 kilos

b. 55,500  
 x 3.50 - NFA - price  
 P 194,250.00 - Gross Sales  
 XXXXXXXXXXXXXXXX

c. P 194,250.00  
 + 1,110.00 - incentive fee at .02 cents. per kilo of palay  
 P 195,360.00 - Total sales

d. ₱ 195,360.00  
 - 149,850.00  
 ₱ 45,510.00 - Gross sales  
 XXXXXXXXXXXXX

e. ₱ 45,510.00 - gross sales  
 - 14,181.16 - total expenses  
 ₱ 31,418.84 - Net sales for 1 year or ₱2,618.24 a month  
 XXXXXXXXXXXXX

LESS EXPENSES :

1. ₱ 45,510.00 Gross Sales	- ₱ 45,510.00
x            .05 Labor	-    2,275.50
₱ 2,275.50	₱ 43,234.50 - Gross Sales
XXXXXXXXXXXX	XXXXXXXXXXXX

2. ₱ 43,234.50	₱ 43,234.50 - gross sales
x            .10 - misc. exp.	-    4,323.45 - misc. exp.
₱ 4,323.45	₱ 37,911.05
XXXXXXXXXXXX	XXXXXXXXXXXX

3. ₱ 37,911.05	
x            .20 - manager and hired laborer	
₱ 7,582.21	
XXXXXXXXXXXX	

TO SUMMARIZE:

1. ₱ 2,275.50 - Labor
  2. ₱ 4,323.45 - misc. expenses
  3. ₱ 7,582.21 - Manager and hired laborer
- ₱14,181.16 - Total expenses  
 XXXXXXXXXXXXXXXXXXXXXXXXXXXX

Total Net Income a year is ₱31,418.84 or ₱2,618.24 a month *if the projected volume of business will be doubled.*

2ND YEAR

a. Expected purchase is 632 cavans x 2 - 1,264 cavans or 63,200 kilos.

b. Buying price SN is ₱2.70/kilo.

c. Selling price is ₱3.50/kilo NFA plus .02 centavos per kilo incentive fee

1.	63,200 kg		2.	63,200 kg	
P x	2.70 SN price per kg		x P	3.50 price /kg nfa	
	-----			-----	
P	170,640 gross purchase.		P	221,250 Gross sales	

3. 63,200 kg  
x .02 incentive fee

P 1264.00 NFA KG

To find out the net income:

a. P 221,200 gross sales  
- 170640 gross purchase

-----  
P 50,560 gross sales

b. P 50,560 P 50,560  
x .05 Labour - 2,582

-----  
P 2,582. Cost of labour. 47,918 gorss sales.

c. P. 47978 gross sales  
x 0.20

-----  
9595 manager and 1 hired labour.

d. P 47,978 gross sales  
- 9595 manager & labour

-----  
38,382 net profit or savings P 3198.53 a month.

e. P 150,000 operating capital  
x .10 misc expenses

-----  
15,000

to find out the net profit or savings for the whole year, operations  
substract total expenses from the gross savings.

1. for labour 2582.00  
2. for manager 9595.60  
3. misc 15000.00 P 27,177.60 total expenses.

The total gross sales after deducting the expenses is P 38,382.40.

1. P 38,382.40 gross sales  
- 27,177.60 total expenses

-----  
9,940.80 net savings  
+ 1,264.00 incintife fee, NFA

-----  
11,204.80 total net savings for one year operations.

2. P 11,204.80 + 250 = 11,454.80 total net profit for the 2nd  
year.

The expected net profit for the 2nd year is P 11,454.80  
for 60,200 kg.

NOTE:

The proposed projected increased is 5% of the net income annually to be the adding value. Thereafter continuously in business operations.

- 1. NFA price of palay per kilo - P3.50
- 2. Private Traders - P3.20 per kilo
- 3. Samahang Nayon - P2.70 per kilo fresh harvest.

ADDING VALUE:

Since the SN has no charge of warehousing fees for the palay stored or stocked at the warehouse, it is now conceived by the Board of Directors that due to my suggestions to consider a small amount by charging .50/cavans from warehousing fees the Board has considered it very significant which add income to the SN.

SOLUTION:

500	cavans	250.00	
x .50	cavans	x	5-yr.
250.00	- A year	P1,250.00	- net for 5 years

Survey Prices of Rice: (BRAN)

- Brown - market price is P2.80 kilo
- Rice mill price - P2.50
- SN price - P1.50

MARKETING ( PALAY TRADING )  
BARAS BARAS SAMAHANG NAYAN  
PROJECTED INCOME AND EXPENSES STATEMENT

particulars	1988 Pesos	1989 Pesos	1990 Pesos	1991 Pesos	1992 Pesos
Gross income	74,935.00	78,671.25	82,604.82	86,735.06	91,071.81
Less Operating expenses					
Wages	18,731.25	19,667.81	20,651.21	21,683.77	22,767.96
Intt on loan	4,000.00	3,680.00	3,385.60	3,114.75	2,242.62
Misc expenses	5,619.48	5,900.34	6,195.26	3,114.75	6,830.36
Total	28,350.73	29,248.15	30,232.17	31,203.65	31,840.94
Income from operation	46,574.27	49,423.10	52,372.65	55,431.41	59,230.87
revenue	4,657.43	4,943.41	5,237.30	5,542.14	5,923.09
Net income	51,231.70	54,366.41	57,609.95	60,974.55	65,153.96

To summarise:

1. First year 1988 net income	Pesos	51,231.70
Second year 1989	"	54,366.41
third year 1990	"	57,609.95
fourth year 1991	"	60,974.55
fifty year 1992	"	65,153.96
	<b>Total P</b>	<b>289,336.57</b>

Based on the computations the net income of the Baras Baras Samahang Nayan for the period of five years in its business operations of buying and selling is Pesos 289,336.57 or 57,867.31 a year or P 4,822.26 a month.

This computation is based only for the 1st year operation of which the expected number of cavans to be purchased is 555 or 27,550 kilos of fresh paddy.

MARKETING ( PADDY TRADING)  
 BARAS BARAS SMAIANG NAYON, INC.  
 Projected Cash Flow for Five years

Particulars	1988	1989	1990	1991	1992
<b>Cash receipts:</b>					
Loan proceeds	950,000.00	-	-	-	-
SN counterpart	25,000.00	-	-	-	-
gross income	74,925.00	78,671.25	82,604.82	86,735.06	91,071.81
Other revenue	4,657.43	4,943.31	5,237.30	5,543.14	5,923.09
<b>Total</b>	<b>154,582.43</b>	<b>83,614.56</b>	<b>87,842.12</b>	<b>92,278.20</b>	<b>96,994.90</b>
<b>Less payments:</b>					
<b>Loan amortization:</b>					
Principal	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00
Interest	4,000.00	3,680.00	3,385.60	3114. 75	2,242.62
<b>Other expenses</b>					
Wages	18,731. 25	19,667.81	20,651.21	21,683.77	22,767.96
Misc expenses	5,619.48	5,900.34	6,195.36	6,505.13	6,830.36
<b>Total</b>	<b>38,350.73</b>	<b>39,248.15</b>	<b>40,232.17</b>	<b>41,303.65</b>	<b>41,840.94</b>
Balance	116,231.70	44,366.41	47,609.95	50,974.55	55,153.96
add cash beginning	..	116,231.70	160,598.11	208,208.06	259,182.61
<b>Total cash ending</b>	<b>116,231.70</b>	<b>160,598.11</b>	<b>208,208.06</b>	<b>259,182.61</b>	<b>314,236.57</b>

**Summary:**

Total cash ending	1988	116,231.70
	1989	160,598.11
	1990	208,208.06
	1991	259,182.61
	1992	314,236.57
		<u>1,058,457.05</u>

The Baras Baras SN, as per computations presented above by buying and selling of paddy for its members and to the National Food Authority (NFA) will realise a net income of Pesos 1,058,457.05 in five years with an average earning of Pesos 211,691.41 a year or P 17,640.95 per month.



## E, Milling Component:

The Samahang Nasyon of Baras Baras Inc. Tarlac, usually charges milling fee of P.O.22 per kg. In 1986, as per records of the SN, there were 57,497 cavans milled, but they did not give significant additional income to the SN.

As per analysis based on the number of cavans milled for the whole year the average ~~xx~~ cavans milled per day was 14.47 cavans or 72358 kilos. This factor will give additional income to the SN, taking into account the big volume from the milling business operations for the whole year January to December 86.

## Solutions:

<p>a. <math>\frac{57497.05}{0.22} = 261,350.23 \text{ kg}</math></p> <p>c. <math>\begin{array}{r} 261,350.23 \text{ kg} \\ \times .22 \text{ milling fee} \\ \hline \end{array}</math></p> <p>P 57,497.05 cost of milling &amp; fee.</p>	<p>b. <math>\frac{261350.23}{50 \text{ kg/cm}} = 5.227 \text{ Grams milled rice.}</math></p> <p>D. <math>\begin{array}{r} 261350.23 \text{ kg} \\ \times .26 \text{ rice bran} \\ \hline \end{array}</math></p> <p>67,951.06 kg of rice bran.</p>
	$\begin{array}{r} 261350.23 \\ - 67951.06 \\ \hline 193,399.17 \\ \text{kg of rice.} \\ \hline \end{array}$
<p>E. <math>\begin{array}{r} 193,399.17 \text{ kg rice} \\ \times .05 \text{ waste material} \\ \hline \end{array}</math></p> <p>P. 9,669.96 value of waste materials.</p>	<p><math>\begin{array}{r} 193,399.17 \text{ rice} \\ - 9,669.96 \text{ waster material} \\ \hline 183,729.21 \text{ Rice milled.} \end{array}</math></p>
<p>F. <math>\begin{array}{r} 183,729.21 \text{ kg of rice} \\ \times 0.69 \text{ value of recovery} \\ \hline \end{array}</math></p> <p>126,773.15 kg of rife milled.</p>	

## To summarise:

- |                            |                 |
|----------------------------|-----------------|
| 1. Rice milled in kg       | 126,773.15 kg   |
| 2. value of rice bran      | 67,951.06 pesos |
| 3. value of waste material | 9,669.96 pesos  |

The milling status of the Baras Baras SN on the following:

- |                       |     |
|-----------------------|-----|
| 1. Rice mill redocery | 69% |
| 2. rice brawn         | 26% |
| 3. waster material    | 5%  |

The prevailing prices of rice bran in the community as surveyed during the preparation of this project are:

- |                  |               |
|------------------|---------------|
| 1. Public market | P 2.80 per kg |
| 2. Rice mills    | 2.50 do       |
| 3. village       | 2.30 -od-     |

A. 67,951.06 kg of rice bran  
 x 2.80 pesos price per kg  
 -----  
 190,262.97 cost of rice bran (gross)

## I. Assumptions:

1. Wages 25% of the gross income
2. Repairs and maintenance 10% -do-
3. Yearly depreciation P 10,666.67 yearly - 15 years
4. Miscellaneous expenses 5% of the gross income
5. Annual increase of gross income 5% of the gross income
6. Other revenue 10% income from operations

The ADDING VALUE of the rice bran from milling business operations of the SN for a period of five years is shown below:

Particulars	1988	1989	1990	1991	1992
Gross income PESOS	190,262.97	199,776.11	209,764.91	220,253.16	231,265.82
Less Operating Expenses:					
Wages	45,565.74	49,944.03	52,441.23	55,063.29	27,816.46
Repairs & maintenance	14,469.72	14,983.21	15,732.37	16,518.99	17,344.94
depreciation	10,666.67	10,666.67	10,666.67	10,667.67	10,666.67
Misc expenses	6,511.13	6,742.44	7,079.57	7433.54	7,805.22
	77,213.26	82,336.35	85,919.84	89,682.49	93,633.29
Income from operations	113,049.71	117,439.76	123,845.07	139,570.67	137,632.53
Other revenue	11,004.97	11,743.98	12,384.51	13,057.07	13,763.25
	124,354.68	129,183.74	136,229.58	143,627.74	151,395.78

To summarise: Net income from the rice bran for a period of five years:

1st year	1988	124,354.68
2nd year	1989	129,183.74
3rd year	1990	136,229.58
4th year	1991	143,627.74
5th year	1992	151,395.78
	total	684,791.52 Pesos

As shown on the computation, the expected net income of the SN from rice bran during its usual operation for a period of five years is around Pesos 684,791.52 or Pesos 136,958.30 a ~~month~~ year.

**RECOMENDATION:**

As a result of the Project study of the Baras Baras III, based on the computations made herein of buying and selling of its members produce to the National Food Authority and by giving adding significant value of rice bran in milling as well as warehousing fees, it is found out that there is a bright prospect if stability within a period of five years starting January 1988 to December 1992 as shown computatively.

To mention further, there are three categories that Baras Baras Samahang Nayon can earn profits, one is through warehousing fees, the second is by giving significant value of the rice bran, and the third one is the buying and selling of palay business operations. As a result of the complete evaluations and analysis, it bears that from buying and selling of palay from its members, it will earn a net savings of Pesos 4,822.26 a month, and for warehousing fees, it will also give a little income at the initial operations in the total amount of Pesos 250,000 a year, and for the rice bran it will also realise Pesos 136,958.30 a month or with a total expected savings or net profit of pesos 141,780.42 a month.

It is also desired that no additional employee shall be recruited within a period of five years considering that this is a semi-help, self-financing organisation in the barrio among the residents to be improved.



NUMBER

SHARES

A007060-4

\*\*\*\*\*1\*

COOPERATIVE INSURANCE SYSTEM OF THE PHILIPPINES, INC.

AUTHORIZED CAPITAL STOCK: ₱12,500,000

This Certifies that AS-BARAS SAMAHANG NAYON, INC

is the owner of **\*\* ONE \*\***

Shares of the Capital Stock of the Cooperative Insurance System of the Philippines, Inc. transferable only in the books of the System by the holder hereof in person or by Attorney upon surrender of this Certificate properly endorsed.

In Witness Whereof, the said System has caused this Certificate to be signed by its duly authorized officers and to be sealed with the Seal of the System.

this 21ST day of NOV A. D. 1983

*Jose G. Gonzaga*  
JOSE G. GONZAGA  
CORPORATE SECRETARY

*[Signature]*  
CHAIRMAN

Shares of ₱100.00 Each

006115

DOCUMENTARY STAMPS TO THE VALUE OF ₱ 1.10 HAVE BEEN AFFIXED TO THE STUB OF THIS CERTIFICATE

02718

COOPERATIVE INSURANCE SYSTEM OF THE PHILIPPINES

STATEMENT OF CAPITAL ACCOUNT

AS OF NOV 21, 1983

AS-BARAS SAMAHANG NAYON, INC  
AS-BARAS, TARLAC  
LAC 2101

ITEM DESCRIPTION	NUMBER OF SHARES	AMOUNT OF CAPITAL	AMOUNT OF CONTRIB SURPLUS	TOTAL PAYM
CAPITAL STOCK SUBSCRIPTIONS--	16	1600.00	92.57	1692
CAPITAL STOCK PAYMENTS--	15	1519.40	92.57	1611
OUTSTANDING BALANCE--	1	80.60	0.00	80

STOCK CERTIFICATES ISSUED:

CERTIFICATE NUMBER	ISSUE DATE	SHARES	CERTIFICATE NUMBER	ISSUE DATE	SHA
1 A000948-7	10 JUN 76	*****1*			
2 A002915-4	20 APR 79	*****1*			
3 A005201-6	10 JUL 81	*****11*			
4 A006759-2	12 FEB 82	*****1*			
5 A007060-4	21 NOV 83	*****1*			

CORRECT  
  
CORPORATE SECRETARY



Republic of the Philippines  
DEPARTMENT OF LOCAL GOVERNMENT AND COMMUNITY DEVELOPMENT  
BUREAU OF COOPERATIVES DEVELOPMENT  
Region III  
Office of the Provincial Development Officer  
Tarlac  
Province of \_\_\_\_\_

# CERTIFICATE OF REGISTRATION

## SAMAHANG NAYON

TO ALL TO WHOM THESE PRESENTS MAY COME, GREETINGS:

WHEREAS, Articles of Incorporation and By-Laws duly signed and acknowledged for the organization of the SAMAHANG NAYON ng BARAS-BARAS TARLAC TARLAC, under and (Municipality)

in accordance with Presidential Decree No. 175 and Letter of Implementation No. 23 were presented for registration in this Office on SEPTEMBER 17, 1973; and

WHEREAS, the said Articles of Incorporation and By-Laws, a copy each of which is hereto attached, have complied with the provisions of the said Decree and LOI as well as the requirements of the Bureau of Cooperatives Development.

NOW, THEREFORE, by virtue of the powers and duties vested in me, I hereby certify that the Articles of Incorporation and By-Laws of the SAMAHANG NAYON ng BARAS-BARAS were duly registered in this Office on the 17th day of SEPTEMBER, 1973

Seal

In testimony whereof I have hereunder set my hand and caused the seal of this Office to be affixed at Tarlac, Tarlac this 17th day of SEPTEMBER in the year of our Lord 1973 and of the Republic of the Philippines.

20c



For the Director:

*Vitaliano D. Espiritu*  
VITALIANO D. ESPIRITU  
Provincial Development Officer





RICE FIELD

← TO POLORAS



TO MAPALAD

SCHOOL YARD

BARANGAY BARAS - BARAS

METHODIST CHURCH

HEALTH CENTER

PLAZA

MINI MARKET

RICE FIELD

RICE FIELD

ROMULO HIGHWAY KM. 131

TO TARIAC

TO CAMILING



Republic of the Philippines  
PROVINCE OF TARLAC  
MUNICIPALITY OF TARLAC

COOPERATIVE RURAL BANK OF TARLAC INC.

For compliance with the three fold foundation  
of Cooperatives: discipline, education and savings and  
obtaining the highest mark in the evaluation by the  
Committee on Awards is awarded this

## Certificate of Award

is hereby given to

Barasbaras Samahang Nayon  
TARLAC, TARLAC

SS


Most Outstanding Samahang Nayon

for the year 1980

Given this 6<sup>th</sup> day of January 1981 at

Tarlac, Tarlac, Philippines.

For the Board of Directors

  
ALFREDO G. MILLADO  
Chairman



FIRST

ICA TRAINING COURSE FOR STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA

NEW DELHI / BANGKOK / TOKYO / SEOUL

1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

Project Title: Fishermen's Cooperative Siganggang,  
Siasi, Sulu  
Country: Philippines  
Prepared by: Mrs Jean Abdurasad

Funded by the Government of Japan  
and

Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.



# C O N T E N T S

Page

Acknowledgement

Introduction

Chapter

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Appendices





## Acknowledgement

To make a project study entails efforts, both physical and mental. The truism is that the whole is the summation of all its component parts. Indeed, some parts of this work are the results of assistance rendered by persons who deserve mentioning for as long as spaces warrant. One such person is Mr. Ombre S. Hamsirani, Executive Director of Regional Cooperatives Development Assistance Office, Region IX, Zamboanga City, Philippines. His full support in every aspect of cooperative works is always at the forefront whenever needed. Engineer Benjamin Cruz and Mrs. Nelia Chavez of the Cooperative Union of the Philippines who nominated me to the course deserve special mention. This gave me the rare opportunity to participate in this undertaking.

Also, the International Cooperative Alliance Administration and Staff in India who accepted our nominations, and the NAFED group, particularly Mr. Ilwadia, for the support extended to us while in India that made our short stay very fruitful. Professor V.R. Gaikwad and Associates of the Indian Institute of Management for having given us so much enlightenment on Agricultural Cooperative Management, particularly value system in a Cooperative Movement. The point emphasized by the good Professor on "not generalizing people and that code of ethics and discipline should be on a situational approach" is worth pondering on.

More importantly, the benevolence of the government of Japan for its financial assistance in promoting this program shall always merit the greater gratitudes of the participants.

In the preparation of this study, the memory of my parents became an inspiration, and to them I dedicate this piece. The place where the project is proposed is where I spent a good portion of my childhood where dreams and aspirations abound. For his suggestions and helps, I also acknowledge the efforts of my husband J.K. Abdurasad who, in many occasions, had gone out of his way to extend a helping hand. Herein acknowledged also is the inspiration provided by my son Jassim.



To my classmates in this course, I express my thanks and appreciation for their kind assistance. Also, Director Abdul-ajid Tahir of Zamboanga City for introducing me to the cooperative program, and to his wife Nimfa H. Tahir for the inspiration and encouragement in the early phase of my career in the cooperative.

Lastly, the assistance of the staff of RCDAO Region IX is acknowledged. To all those who, in one way or another, have contributed to this endeavor and all cooperators, I say many thanks and "MABUHAY ANG SAMAHAN".

JEAN N. ABDURASAD

February 12, 1987  
Zamboanga City, Philippines

## INTRODUCTION

Cooperativism is an age-old practice in all islands comprising the Philippines. Since the advent of western colonization, cooperative endeavors were common among the native inhabitants, be it building a house, tilling farm lands, fishing communal grounds and other activities. This practice, though in its basic form, is what the Filipinos call "bayanihan system" which is roughly defined as the pooling together of efforts or material resources for the benefit of an individual or for a common objective. From this basic practice sprung a broader concept of cooperative efforts which, after the country became independent in 1946, was made the basis of government policy on the institutionalization of cooperatives as is known today.

The government office that implements policies on cooperatives is the Bureau of Cooperatives under the Ministry of Agriculture and Foods. In each of the country's 13 regions, a cooperative regional office is established in order to put into full effect official programs on cooperative—from organization to supervision. Specially worth noting is the fact that specialized cooperative offices were created in 1980 at two regions of the country. Under Executive Order 634 dated December 4, 1980, the government cooperative offices in the two regions of Mindanao (Region 9 and 12) were made into Regional Cooperatives Development Assistance Office (RCDAO) in order to positively undertake expansion programs on cooperative education and the like. This gave government men more opportunities to preach the virtue of cooperative endeavors. Emphasized is the idea that what would seem impossible to achieve individually could be done so through united efforts. The approach has gained much momentum and the response of the local inhabitants is encouraging. Though in small scale, more new cooperatives are now organized in these regions.

## Chapter 1

### SUMMARY

1. a. A fishermen's cooperative composed of fifty to two hundred members to be established at Siganggang, Municipality of Siasi, Province of Sulu, Philippines.
  - b. The operation consists of daily or nightly fishing trips within the waters surrounding the islands of Siasi, Lapak, Sirum and other nearby islands.
  - c. The fishermen-members will serve in various capacities, such as crew of the fishing vessel, processor of the catch, marketing men, etc. They will be assigned to these different works in shifts in order that they will be afforded equal opportunity to earn with the cooperative.
  - d. The area of operation is identified to be one of the richest fishing grounds in the province. Each fishing trip is estimated to have an average catch of 800 to 900 kilos of fish.
2. a. The primary market is the poblacion of Siasi and nearby barrios. Other places are also considered especially on occasions of bigger volumes of catch.

- b. Catches that cannot be absorbed by local market will be dried or chilled and transported to big cities like Zamboanga. Dried products may be marketed thru special tie-ups with other consumer cooperatives in the region.
  - c. Marketing strategy will be developed on a long term basis in such a way that linkages will be established with local, provincial and regional cooperative unions.
- 3.
- a. Fishermen-members will increase their productivity and income. Also they share in the portion of the production in the form of "participatory shares". They receive regular dividends on their investments.
  - b. Other benefits can be extended to them in form group insurance, medical care, scholarship, etc.
  - c. On the whole, the project is expected to double its size and resources after the fourth year of operation.
- 4.
- a. The project is highly feasible. For a given it will achieve its break-even point after the third month of operation.

- b. The margin of profit is above 100% for the year. The ratio of profitability is 1 : 1.14. Roughly stated, this means that of every unit of investment, 1.14 realized as profit at the end of the year.
  - c. Cash flow analysis shows that on the second year of operation, it can construct its own warehouse; after the third year, it can afford another fishing vessel; and after the fifth year, it shall be ready for diversification.
5. Recommended to be implemented in full during the year.

BACKGROUND

The Sulu Archipelago in the southern part of the Philippines is endowed by nature with richness among which is a vast fishing ground with varied species of marine creatures. One of the areas in the region is a cluster of islands known geographically as "Siasi Group". This consists of islands and islets, some are uninhabited, that are only separated by shallow reefs that provides abundant catches to intrepid fishermen.

It appears to be of supreme irony that in this area, no big scale fishing is being undertaken. Individual fishermen carry on their daily trade the same way their forebears of half a century ago. In other words, modern fishing technique are still wanting, hence, the vast area is practically left untouched.

Against this background, this project is conceived with the purpose of exploring all possibilities of extending to these native fishermen the fruits of cooperative undertaking for their ultimate benefits.

The area where this project is to operate is one of the richest fishing grounds in the country. Along both sides of the island-cluster, Celebes Sea to the South and Sulu Sea to the North, big volumes of marine products await exploitation.



Barrio Siganggang has about 3,500 inhabitants whose only principal sources of livelihood are agriculture and fishing. Those engaged in farming produce crops like cassava (tapioca), vegetables, and staple products. Some small quantity of copra are produced. Occasionally, even those working on the farms go fishing for home consumption and to augment their income. A greater number, however, resort to fishing. But despite their diligence and tenacity, they can hardly provide for their basic needs. The reason for this are varied, among which are inadequate skills, lack of proper gears and paraphernalias, poor marketing strategies and many others. This project introduces new concept that the fishermen can maximize the benefits out of their labors.

## Chapter 3

### THE PROJECT

Situs - This project is proposed to be established at Barrio Siganggang, one of the fishing villages in the municipality of Siasi. Siasi is in the province of Sulu and is the second largest town next to Jolo, the provincial capital. Sulu is an archipelago of some 700 islands with shallow reefs that account for its rich marine resources. It is located at approximately 5 degrees north latitude and 120 degrees west longitude. Its tropical climate is ideal for raising agricultural products and its rich fishing grounds are known throughout the whole of Asia.

Objectives - The project has the following objectives:

- a. To increase the average income of the fisherman in the area;
- b. To inculcate in their minds the importance and advantages of cooperative endeavor;
- c. To accelerate the economic development of the community;
- d. To tap the rich marine resources of the area for the benefits of the local inhabitants.-

Project components -

It is to be emphasized that for this (cooperative) project to operate smoothly, its role should be clearly defined. While the membership is composed of individual fishermen, they cease to operate as individuals. They now become components of the bigger unit and work for

the interest of the whole. Their rights and privileges and members, however, are clearly spelled out.

This project therefore requires:

- a. Continuous fishing activities of the members working as a team;
- b. Readiness of the cooperative members to render personal services to the cause of the cooperative;
- c. Ready market for the product and the ability of the cooperative to market the products at prices best obtainable. The first two depend on the attitude of the individual members, while the last is for the cooperative to carry out.

Equipment, Gears and Paraphernalia - The project needs the following for its operation:

1. Fishing vessel - a wooden-hulled vessel built locally. It is of 25 gross tonnage, to be powered by a 90 horse power marine engine. It will be manned by a complement of 25 crew members which, in this case, are all members of the cooperative. To complement the vessel the following are needed:
  - a. One service boat of small built also of wooden construction and powered by small marine engine usually a 16-horse-power one;
  - b. Two skiff boats, non motorized;
  - c. Other regular accessories such as life vests, fishing lines floats, ropes, utensils cots, etc.

2. One (1) set of bagnet with a minimum dimension of 65 ft. length, 35 ft. width and 15 ft. depth.
3. One unit power generator to provide lighting and other electrical needs.
4. Others (optional):
  - a. Fish shelters (payaw) four to five units;
  - b. Warehouse for storage of processed products. This can either be rented or constructed.

#### Need and Justification for the Project

This project is invisioned to extend to the fishermen-members benefits which normally denied them in the ordinary course of individual fishing, vis:

1. It introduces them into the concept of collective endeavors. As most of the local fishermen are still in the dark about the benefits of cooperative undertakings, this project shall become their eye-opener. As the built-in advantages begins to operate in their favor, they will realize that they will generate more income with the organization than by merely doing their usual trade on their own.

2. It affords them access to modern fishing techniques and fishing gears. This being a venture much bigger than what they are used to, it necessitates the introduction of modern fishing methods. To make them efficient and skilled, the cooperative, in the

course of time, can afford to provide its members proper training on modern and scientific approach to fishing and fish cultures.

3. It enhances their personal income thru the introduction of incentives and participatory shares in the earnings of the cooperative. This study embodies some concepts whereby the members are afforded extra income aside from those guaranteed them as investors and as members. The concepts are in the "participatory shares" and "dividend distribution" at the end of the operation year.

4. It guarantees them regular income apart from the incentives above mentioned; Members assigned specific task are guaranteed outright income in the form of salaries (crew members of vessel) or privileges (distributionship of catch).

5.- It promotes better relationship among the member-fishermen and eliminates discords brought about by the effect of competitive individual fishing operation. The member shall be introduced into the concept of united endeavor. By this, they will develop a spirit of belongingness to the organization. They shall begin to realize that each one works for the betterment of the group. They become more tolerant and accomodating of one another.

6. It affords the community regular supply of fish at much lower prices. The consequential benefit of greater supply of fish is afforded to the residents of the locality. Greater supply carries with it the attendant effect of lower price.

## Chapter 4

### DETAILS OF OPERATION

For the actual fishing operation, the Operation Manager of the cooperative looks into the needs of the vessel, from supplies, victuals and the gears and other fishing paraphernalia. He also determines the composition of the crew which shall all be members. Unless absolutely necessary, the hiring of outsiders is not allowed. Initially, this will consist of 17 persons. One who is most qualified will be designated chief of the vessel and another shall act as his assistant. The other 15 shall be given specific assignments on board. In doing so, their skills is to be considered. As the volume of activities increases, the crew will be enlarged to as many as 30 depending on the capacity of the vessel.

The composition of the crew may be done in shifts to enable other members to participate in the fishing sorties. Each shift consists of a given number of days. This is important because of the credits awarded to crew members in the form of "participatory shares" as will be explained later. The actual operation may be headed by the chief of the vessel if he has the technical know-how, or it may be assigned to a member who can best handle the job.

In a period of one month, 18 to 22 fishing trips can be made. These are done either during the day or at night. After each trip, the vessel returns to a designated point of anchorage where the catch are sorted and determined. The Marketing Manager super-

vises the actual selling. All sales are duly recorded and such records are kept by the Treasurer. If there are catches which cannot be absorbed by the local market, those that can still be sold the practical way shall be determined. These are placed in the styro foam boxes, chilled and brought to alternate markets. In this case, one such market is Jolo, the capital town. Also, as practiced in the area, there are distributors who buy fish from fishing boats and distribute them to regular vendors in the market for sale to the ultimate consumers. They come in their own pumpboats or bancas and conduct their purchases to nearby places. Here, the other members can be extended the distributor's privilege.

When this is resorted to, the Marketing Manager keeps records of the volume and the money value of the fish delivered to the distributors, as the distribution is now on credit. This scheme affords a member to earn extra money from the cooperative. Each distributor reports to the Operation Manager in the afternoon and make good his payment. In case there is failure to pay, the distributor is given until the following day before he takes his next quota. Failure to pay after the period of two days may cause the loss of the member's distributor privilege.

## MARKETING

The Market. In the overall operation of a business, marketing is an all-important factor to consider, for after all, market is the source of revenues. The kind of market usually determines the ups and downs of the enterprise, be it a small market stall or a giant conglomerate. For this project, the targeted market is the poblacion of Siasi. It is the center of commercial activities for the entire municipality. In nearby areas, especially along the coastal lines of the island, villages abound and local inhabitants refer to the poblacion for their daily household needs. It has a spacious public market and an array of privately owned commercial stores.

In this study, it is estimated that the daily catch will be absorbed locally and residents will enjoy the benefit of ample supply of fresh fish. This in effect tends to push the prices down. On occasions where the local market cannot absorb all the catch, alternatives become necessary.

As hinted earlier, the cooperative primarily disposes of its products on wholesale basis. This will be done through special arrangement with other members who will undertake the distribution to market places. A member who may not be able to join the fishing expedition as crew of the vessel can ask for selling privilege and can do business as distributor to fish vendors. For equitable distribution, the Marketing Manager may resort to quota system, i.e. allocating specific volume to each



member-distributor. In this way, a member is given the opportunity to earn although he is not involved in actual fishing operation.

As exigencies may require, a given percentage of the daily catch may be set aside for processing thru drying and salting. This is especially true with species like big-eyed scads, sardines and anchovies. In local practice, sardines and scads are dried while anchovies are salted.

Processing and Marketing of Excess Catch. On occasions where catches are much more than local demand, as they frequently happen, the activities of the cooperative members include processing of the excess catch. Local methods however is limited to drying and salting only, as other sophisticated means are yet to be introduced to the local fishermen. With these products, the market becomes wider for dried and salted fish command higher prices in big places like Zamboanga City\*. The processing works will be assigned to, and distributed among, the members. In this work, even immediate members of their family can take part, and they shall be monetarily compensated for their labors. This is another way where the cooperative can fairly distribute income generating activities among its members.

Due to the expected excess of catch and the resort to processing, the cooperative needs a place to store the dried and salted products. As the quantity increases,

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\*Zamboanga is the biggest city in Region 9 to which the Province of Sulu belongs.

the Marketing Manager enters into a special tie-up with other consumer cooperatives in other places. There is one in Jolo and some others in Zamboanga. As this is done, the cooperative finds it easier to market excess products. Furthermore, dried and salted fish can be stored for longer period without risk of being spoiled. Because of this, the cooperative can program its marketing by determining the time when prices are at their peak. This can also be shipped to far flung areas where prices are high.

Marketing of Other Species. The above is appropriate only for species like scads and sardines. For bigger ones like yellow fin tuna, mackerels and skipjack, they can be subjected to chilling or freezing and transported directly to canning factories in Zamboanga. The city has three of these canneries (Sikatuna Fishing Co., Philippines Tuna Corporation, and Marfishing Corporation). There are also refrigerated boats of big companies in Manila going around western Mindanao to buy fish from local fishermen. For excess catches of these species, the cooperative can sell directly to them. Also, it is the intention of this study to consider the feasibility of tapping the Provincial Union of Cooperatives and the Federation of Cooperatives and the Apex Organization as channel of distribution of by-products. Further, as catches of big species may exceed expectation, prior arrangement can be made with fish exporters who will absorb all this catch.

ORGANIZATION AND MANAGEMENT

A fishermen's Samahang Nayon will be organized at Barrio Siganggang to be composed of regular residents who resort to fishing as their primary livelihood. For this purpose, the Regional Cooperatives Development Assistance Office (RCDAO) will come into play through its provincial office in Sulu. This office will shoulder the expenses during the organizational stage—from pre-membership seminar to actual organization. As required, it becomes a member of the Provincial Cooperative Union based in Jolo, the provincial capital. This is for purposes of proving proper linkages with other established cooperatives in the locality. This will also enable the new cooperative to establish tie-up with existing ones especially in the marketing of products.

It is shown then that this cooperative will have a wider area to trade in as far as marketing its product is concerned.

Organizational Structure

Just like any other cooperative in the country, this Samahang Nayon has its major structural elements, viz:

- The general membership;
- The officers of the association, consisting of the elected members of the Board of Directors and the officers and employees appointed by them;
- The three standing committees.

A minimum of 50 members shall comprise this Samahang Nayan. However, membership in this case shall be limited to 200 only in order to preserve the closeness and harmonious relationship in the group.

This Samahang Nayan will operate along Kilusang Bayan principles and practices. All officers of the Association will serve on a voluntary basis and will not receive remuneration for their services. However, payment of reasonable travelling expenses may be authorized to officers on official business for the Association from its funds. Its officers, as well as their manner of selection and functions, are as follows:

(A) Members of the Board of Directors

1. Manner of Selection: Initially, 5 directors are elected by the General Assembly during the organizational meeting. The General Assembly consists of all the members of the cooperative. In this case, persons engaged in the business of lending, the sale of fishing supplies and gears, and in the business of buying, processing, storing and selling of fishery products cannot be elected to the Board. In addition, elective

government officials are disqualified from becoming members of the board.

2. Functions: The Board of Directors formulates policies and ~~determines~~ the manner of operation of the Association; acts on applications for and withdrawal from membership; approves projects proposed by the officers and committees of ~~the~~ Association.

(B) President

1. Manner of Selection: He is elected by the members of the Board of Directors from among themselves immediately after the organizational meeting.
2. Functions: He represents the Association in all social and other activities; presides over all meetings of ~~the~~ Board of Directors; prepares, in consultation with appropriate officers and committees; He prepares a yearly program of activities for the Association.

(C) Vice-President

1. Manner of Selection: He is elected in the same manner as the President.

2. Functions: Acts as the President in case of the latter's absence or inability; concurrently serves as chairman of the Education and Training Committee of the Association.

(D) Secretary-Treasurer

1. Manner of Selection: Also elected in the same manner as the President.
2. Functions: Keeps minutes of meetings of Board of Directors and General Assembly; serves as custodian of assets and finances of the Association.

(E) Manager

1. Manner of Selection: He is appointed by the Board and may or may not be a member of the Board of Directors. But must be a member of the Samahang Nayan.
2. Functions: Responsible for the business affairs of the Association; prepares annual budget in coordination with the program of activities approved by the Board of Directors; concurrently serves as chairman of the Finance and Development Committee.

(F) Auditor

1. Manner of Selection: Selected in the same manner as the Manager.
2. Functions: Audits the books of account of the Association; concurrently serves as chairman of the Audit and Inventory Committee.

(G) Committees

The Association shall have three standing committees as required, and their manner of selection and their functions are as follows:

(1) Education and Training Committee:

- a. Manner of Selection: Consists of three members, with the Vice-President serving as ex-officio chairman. Two members are appointed by the Board of Directors from among qualified and willing association members.
- b. Functions: Promotes Cooperative education among members and non-members; handles the educational or inform-

ational aspects of projects; prepares an annual program of cooperative education in coordination with the President.

(2) Finance and Development Committee

- a. Manner of Selection: Two members of this three-men-committee are elected by the General Assembly from among its members during the organizational meeting. The Manager serves as the chairman.
- b. Functions: It plans and implements a savings campaign and other fund-raising projects; coordinates with the Education and Training Committee as may be necessary; spearheads development of Association, or alliance with other Samahang Nayons to form full-fledged Kilusang Bayan.

(3) Audit and Inventory Committee

- a. Manner of Selection: Two of this three-men committee are elected by the General Assembly during the organizational meeting. The Auditor serves as chairman of this committee.



b. Functions: It has for its main function the audit of the Association's books of account and actual checking and determination of all monies in the custody of all accountable officers and employees, such as the Secretary-Treasurer. It takes quarterly inventory of the physical assets of the Association.

#### (H) Employees

1. Manner of Selection: They are appointed by the Board of Directors, subject to the limitation that only sons and daughters of the members will be employed by the Samahang Nayan. The cooperative looks into the educational qualifications of the applicants. Blood relationships are to be taken into consideration particularly for sensitive positions.

#### (I) Crew Members of the Vessel

They are picked by the Operation Manager from among the members of the cooperative, and their selection is subject to the confirmation by the Board of Directors. In the giving of their assignments, their individual skills shall be considered. For purposes of affording them equal opportunity, every member will be assigned to works where his capabilities can be maximized.

#### (J) Others

Hiring of non-members for works requiring special skills may be made, subject to the prior approval of the Board. However, such employee shall be

afforded the opportunity to become a member within a prescribed period, say six months. An example of job requiring special skill is mechanic of the vessel. Furthermore, subject to rules and policies governing cooperatives, management is given some leeway in hiring outsiders as the needs of the association require, provided, in doing so, the privileges accorded to the regular members are not violated.

## FUNCTIONAL STRUCTURE

As the policy-determining body, the Board of Directors directs the course of the cooperative. It hires the officers and set programs for management to carry out. The important officers are:

1. The General Manager. The General Manager is appointed by the Board. He may or may not be a member thereof, but must be a member of the cooperative. His term of office is at the pleasure of the Board.

### Functions:

- a. He is responsible to the Board for the over-all operation of the cooperative;
- b. He exercises supervision over all the officers of the association;
- c. He prepares annual report every end of the year, outlining therein the general activities and the financial condition of the cooperative.

d. He prepares and submit to the Board the annual budget, including cash flow analysis, revenue forecast and other recommendations.

2. Operation Manager. He is also appointed by the Board on recommendation of the General Manager. He is responsible for the actual fishing operations, and oversee the maintenance and upkeep of the fishing vessel. The determination, assignment and shifting of the crew are his responsibilities also. Corollary to this, he is incharged of the provisions of the crew on board, the fishing gears and paraphernalia and the necessary supplies for the operation. He takes charge of planning and scheduling of fishing activities. He is responsible to the General Manager.

3. The Marketing Manager. He is charged with the marketing strategy of the cooperative. He supervises the selling of the catch and processed products. He determines who among the members be extended distributor's privileges. He allocates quotas and oversee the processing of fish into dried or salted products. He is also responsible to the General Manager and supervises the employees assigned to his department.

## AFFILIATION IN THE COOPERATIVE MOVEMENT

As a Samahang Nayon, government policy requires that it affiliates with the Kapisanan Ng Mga Samahang Nayon (Association of Cooperatives) in the locality. This Kapisanan as a whole will be associated with the provincial union of cooperatives. The latter will coordinate with consumers, producers and marketing cooperatives on provincial level.

The Provincial Union of Cooperatives then affiliates with the regional union, and Regional Union will finally federate with the apex body, the Cooperative Union of the Philippines (CUP).

## BENEFITS AND PRIVILEGES OF MEMBERS

The underlying idea in cooperative is pooling together of resources either physical or material for the benefits of the members. As the old adage puts it, "in union there is strength." By sheer number working together, the group can now be directed towards the attainment of desired purpose. In the instant case, Management can begin planning its operation along pre-determined course. However, it must be emphasized that the cooperative, as an entity, must not lost sight of the welfare of the members, for after all this is being organized to serve their best interest.

The benefits which the members are to enjoy should be built into the system. Among the important ones are herein enumerated:

1. Participatory Sharing- This is granted to members--fishermen who take part in the actual fishing operation. This is done by setting aside the money value of a given percentage of the catch per trip and divide it equally for the credit of the members. However, this is to be done only in cases where the operation yields favorable results taking into consideration the expenses incurred. In other words if the day's operation results in losses, there will be nothing to share. This concept can be done only in group undertakings with shorter time frames and with immediate results, as in the case of fishing trips.
2. Distributorship Privilege - This is extended to members who have not participated in the actual fishing operation. This is given by making the member the distributor of a given volume of the catch to the individual vendors in the market

place instead of the usual middlemen as is the common practice in the locality. Under this scheme, the member get from the cooperative portion of the catch under a fixed price and on credit. He then sells it to the vendors at his price thereby make profits out of the transaction.

3. Processing Privilege- In the event of high volume of catches, those that can not be absorbed by the local market may have to be processed. The cooperative can call upon the members to undertake the processing works. The members called upon to do so are paid the money value of their labors based on rates previously agreed upon. Here, the cooperators, including some members of his family may earn extra money while serving the cooperative.
4. Year-End Dividends - By year end, management determines the result of the over-all operation. A portion of the net profit is to be set aside and be declared as dividend and to be distributed to members on the basis of their individual capital investments and patronage.

In addition to the above, the cooperative can call upon the members to undertake specific works instead of paying outsiders to do them,

such works may include crating, hauling and delivery. Furthermore, as the cooperative grows and increases its earnings, other benefits like group insurance, medical care, scholarship can be extended to the members.

FINANCIAL ANALYSIS

Financial Management for Cooperative enterpris. should:

1. Describe the condition of a cooperative organization in financial terms;
2. Relate an operating statement to a statement of condition; and to identify the relationships between them;
3. Deploy the funds already within their organizations as effectively as possible before looking for external funds;
4. Identify the various external sources of funds available to an organization and to assess which are suitable in particular circumstances;
5. Indicate the movement of money within their organization in such a way as to maximize the use of funds for profitable investments.

Having these in mind, assumptions are made and results are illustrated in Exhibits "A", "B" and schedule No. 1.



## CAPITAL REQUIREMENTS:

This project requires the following:

Fishing Boat (Basnig): Hull - Cost - P200,000.00  
(25 tonnage-gross)

90 horse power (IZUZU) engine - 100,000.00

Fittings: Mast, propeller, etc. - 50,000.00  
P350,000.00

One unit service boat:

Wooden Hull P15,000.00  
with 16 HP engine 20,000.00  
fittings 5,000.00 40,000.00

Accessories:

Bagnet (1 set) P120,000.00  
power generator 25,000.00  
skiff boat (1 unit) 10,000.00 155,000.00

10 units, wooden  
boxes w/styro foam P 8,000.00

Optional:

Others: Fish shelters  
(payaw) 4 units at  
P25,000/each 100,000.00 108,000.00  
P653,000.00

Warehouse P100,000.00

Other incidental equip-  
ment, i.e. floats,  
lines, utensils,  
kerosene lamps. 50,000.00 150,000.00

TOTAL EQUIPMENT AND WAREHOUSING COST -P803,000.00  
=====

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Source of costing (1986 index price) Bureau of Fisheries  
and Aquatic Resources, Region XII, Cotabato City.

## Capital Build-up and Savings:

### (A) Policies

- 1) The Samahang Nasyon shall encourage continuous savings among the members which shall be deposited with banks designated by the Samahang Nasyon. These savings are for the following purposes:
  - a) Share capital of ~~the~~ prospective full-fledged kilusang bayan;
  - b) Payment of share of stock of rural banks in the name of individual members;
  - c) Barrio Guarantee Fund; and
  - d) Purpose authorized by the Ministry of Agriculture, Bureau of Cooperatives Development through the RCDAO IX.
- 2) The first three types of savings shall not be withdrawable except for the purpose for which they were set up.
- 3) Other policies may be adopted by the Board of Directors provided they do not violate cooperative rules and regulations.

### (B) Procedures

- 1) Members shall save systematically and regularly for purposes mentioned above in the follow-

ing amount and frequencies:

- a) Five per cent (5%) of all loans from the lending agency shall be withheld by it and deposited in a designated bank for the account of the Samahang Nayon which it shall hold in trust for the individual member-borrower. For this purpose, 5% of all approved loans shall be deducted by ~~the~~ lending agency from the principal but shall be considered and charged as part of the principal loan.
  
- b) Every end of ~~the~~ month, the cooperative shall determine the credit of each member in the participatory shares and this can be taken as the members contribution as payment of his subscription. The Association shall maintain a record of the individual contributions. The accounting for this fund will be a useful exercise for the Samahang Nayon and may be used as one of ~~the~~ criteria for determining whether or not the Samahang Nayon should be organized or integrated into a cooperative.

To operate in a bigger scale as invisioned by this project study, the above scheme is not sufficient and so, its capital structure or capital formation and capital build-up scheme is modified as follows:

for its obligations, and reserves, portion of the net profit is set aside as amount available for dividends. Such amount is to be distributed to members on the basis of their capital investments in the cooperative.

#### INCOME FOR INDIVIDUAL FISHERMAN: COMPARATIVE ANALYSIS

To determine how membership in the cooperative benefits the individual fisherman, a comparative analysis is presented.

The common practice in the locality is to go fishing as a team of two or three persons. Very often, it is a team of two working together and dividing the catch between them. This team goes fishing on a banca or vinta, usually not motorized. The gears used are the basic ones=hook and line, multi-hand line, baits, net, kerosene lamps to lure the fish and other simple accessories. With this system, the average catch is 15 to 20 kilos, which will be shared by them equally.

Using a motorized small wooden-hulled fishing boat, the team may compose of three to four members. Using the same kinds of fishing gears, the ratio of the catch will be more or less the same. The only difference in this case is that the team members do not have to paddle all the way to the open sea and back home.

There are also plenty of the brave ones who go out to sea individually in a wooden banca, a canoe-like craft. Due to the inherent limitations he cannot go out far and fish only in shallow waters. The catch here is much lesser.

Going back to the typical example, per fishing trip, a fisherman has average share of 10 kilos. Of these, he usually sets aside a kilo for his home consumption, giving him only 9 kilos of net share. At ₱8.00 per kilo, this yields him only ₱72.00. His share in the expenses for the trip is ₱20.00 netting him only an income of ₱52.00.

This example typifies only an average fisherman living in the area. However, the sad reality is that there are more of them who earn less than the amount in this illustration.

With the cooperative, he can enjoy the benefits of being a member in addition to his regular income. If he is taken as a crew of the vessel, he is guaranteed a regular salary. He is credited with participatory share each fishing trip (assuming that sufficient catch is netted). He receives year-end dividends on his investment and enjoys other form of benefits that the cooperative may be able to provide.

$$\begin{array}{r}
 17,600 \times \text{P}8.00 = \text{P}140,800 \text{ - revenue per month} \\
 \quad \quad \quad \times 12 \text{ --} \\
 \hline
 \text{P}1,689,600 \text{ - gross income per year} \\
 \hline
 \hline
 \end{array}$$

That no distribution of dividend for five years to ensure stability of business and for it to pay outstanding indebtedness if any. Also, this is for expansion program as may be necessary.

Based on the foregoing assumptions, this study includes the following postulates:

- a. The cooperative will only rent the warehouse for one year, while in the second year, enough funding is required to construct their own bodega.
- b. After the third year of operation another vessel can be purchased, thereby doubling the volume of catch in the fourth year. This will ultimately increase the income of the members as shown in Exhibit "B".

Lastly, by the fifth year, the cooperative can afford new equipment for specialized processing and in the sixth year diversification program or mix farming may come in. This will be in conformity with the integ-

rated approach of Agricultural Cooperative Management Farming. It can branch out and engage in activities involving other marine products such as seaweeds, prawn and shrimp cultures, etc. This will ultimately answer the overall objective of this project which is to maximize farmers income. (See Schedule No. 1 and Exhibits).

Break-even Analysis:

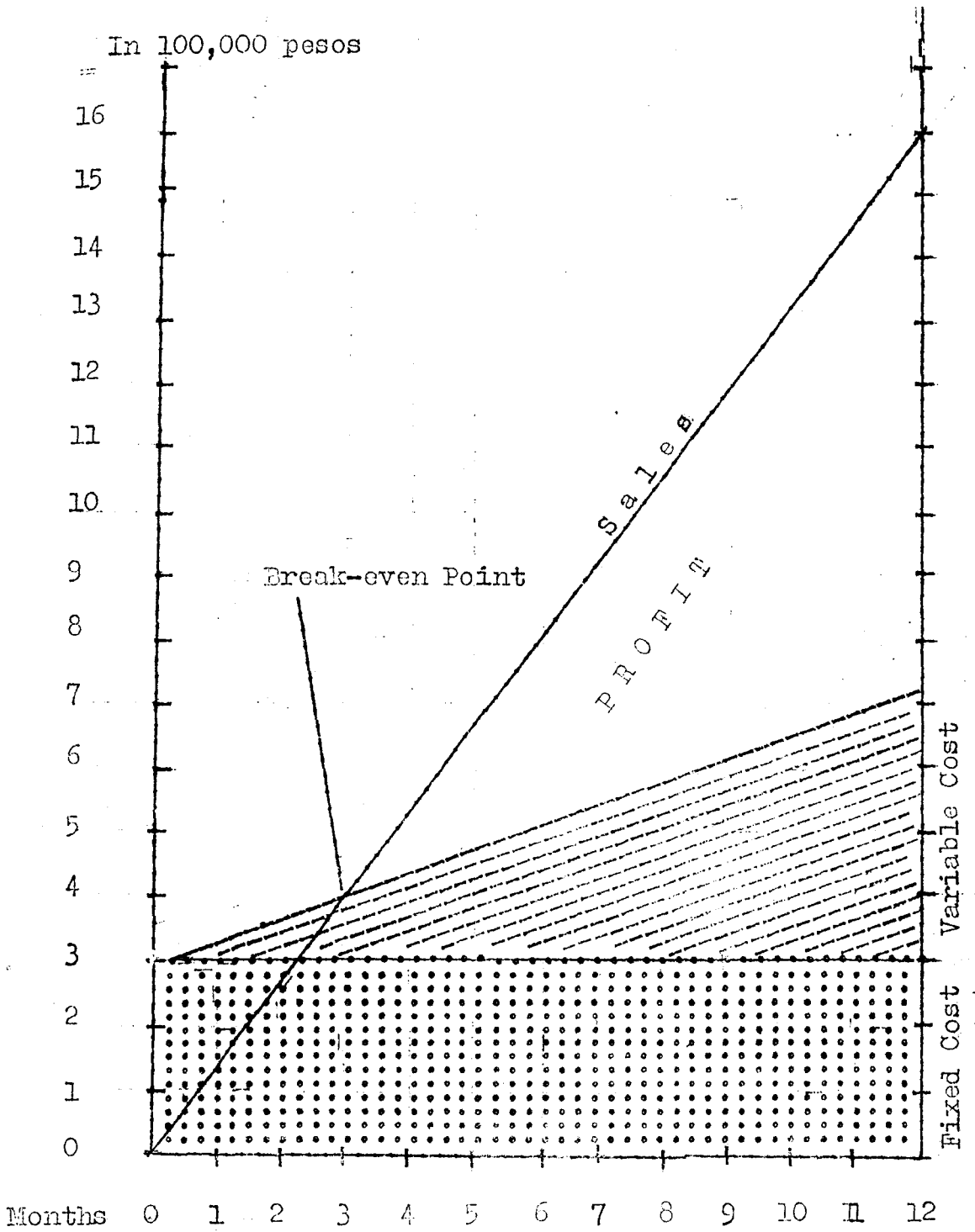
Break-even point, in simple terminology is that point in the operation of business where revenues are just enough to cover all operational expenses. In short, it is the situation where there is neither profit nor loss. Fitted against this project, the break-even point is affected by lesser factors, as they are in simple business concerns. (see graph next page)

Analysis:

Fixed Cost:

Salaries . . . . .	P225,520.00	
Allowances . . . . .	63,600.00	
Depreciation-Equipment . . . . .	79,333.00	
-Others . . . . .	33,333.00	
Rental . . . . .	<u>3,000.00</u>	P404,786.00

In 100,000 pesos



BREAK-EVEN CHART



Variable Cost:

Operation-vessel . . . . .	P176,880.00	
Marketing . . . . .	48,840.00	
Repairs and Maintenance . . . . .	63,500.00	
Miscellaneous . . . . .	<u>10,000.00</u>	<u>P299,220.00</u>

Total Cost for the year . . . . . P704,006.00

The graphical illustration shows that the break-even point is attained immediately after the third month. This is on the assumption that the fishing operations go on normally unhampered by outside factors.

It also shows that the break-even point is reached after sales reach just below the half million mark. To check that graphical illustration, the following calculations are used:

Check:

No. of days of operation:

January	22
February	20
March	22
April	<u>7</u>
	<u>71</u>

Total number of days.

The number of days multiplied by the average daily catch of 800 kilos gives the total catch (in kilos) for 71 days, thus: 800 average daily catch (kilos)

	<u>x 71 days</u>	
56,800	- total catch for 71 days (kilos)	
<u>x 8</u>	- average price/kilo (in pesos)	
<u>₱454,400</u>	- Break-even sales	

RECOMMENDATIONS

Before the actual preparation of this project study, several people were interviewed and the results studied. It seemed to be the consensus of many that a project study is only to fulfill a certain requirement in the course and is only used for application of certain learning processes.

This lukewarm attitude is caused by project studies that had never gone beyond the point of writing them on paper.

On other points, results of the interview with several field workers of RCDAO IX, Zamboanga City (Philippines) indicates that if ever SN Fishermens' Cooperative has not been successful in this part of the country, it is due to the peace and order condition. Because of this, operations of small time fishermen are limited to areas where fish are no longer in abundance.

The area invisioned for the project does not have these problems due to the fact that as explained earlier, the area is unexploited and the people are peace loving.

As has been observed, the non-implementation of projects is principally for reasons of lack of financing. In this case, as may be noted, the initial fifty members put up investment at P1,000.00

will only yield ₱50,000.00. This meager amount is not even enough to pay for ordinary fishing paraphernalia. As indicated earlier, the material cost of the project is ₱803,000.00. Anticipating incidental expenses, the project cost will be more. It is to be noted that the material pricing is as of 1986.

It becomes therefore obvious that to implement this project financing is needed. Assistance from the government, is hardly possible considering the present economic and political problems confronting it.

It is therefore recommended that this project be implemented in full during the current year.

The Cooperative Union of the Philippines and the International Cooperative Alliance is requested to look into source of funds for the project.



SN FISHERMEN'S COOPERATIVE  
 Siganggang, Siasi  
 Sulu, Philippines

PRO-FORMA BALANCE SHEET

(Amount in million pesos)

	<u>1st.</u>	<u>2nd.</u>	<u>3rd.</u>	<u>4th.</u>	<u>5th.</u>
<u>Assets:</u>					
Cash on hand and In-Bank	P1.65	P2.47	P2.51	P4.91	P4.71
Fixed Assets	<u>.8</u>	<u>.7</u>	<u>.8</u>	<u>.7</u>	<u>.9</u>
TOTAL ASSETS	<u><u>P2.45</u></u>	<u><u>P3.17</u></u>	<u><u>P3.31</u></u>	<u><u>P5.61</u></u>	<u><u>P5.61</u></u>
<u>Liabilities:</u>					
Accounts Payable	1.60	1.51	.73	-	-
<u>Members' Equity &amp; Reserves</u>					
Share Capital	.05	.06	.07	.08	.09
Reserves	-	.80	1.6	2.48	2.19
Net Profit	<u>.80</u>	<u>.80</u>	<u>.91</u>	<u>3.05</u>	<u>3.33</u>
TOTAL LIAB ILITIES, EQUITY & RESERVES	<u><u>P 2.45</u></u>	<u><u>P3.17</u></u>	<u><u>P3.31</u></u>	<u><u>P5.61</u></u>	<u><u>P 5.61</u></u>

Exhibit "B"

SN FISHERMEN'S COOPERATIVE  
Siganggang, Siasi  
Sulu, Philippines

OPERATIONAL BUDGET

(Amount in million pesos)

	<u>1st.</u>	<u>2nd.</u>	<u>3rd.</u>	<u>4th.</u>	<u>5th.</u>
GROSS INCOME	P1.6	P1.8	P2.0	P4.4	P4.8
Less: Cost of Goods Sold	<u>.10</u>	<u>.12</u>	<u>.13</u>	<u>.30</u>	<u>.32</u>
GROSS MARGIN	P1.50	P1.68	P1.87	P4.05	P4.48
Expenses	<u>.7</u>	<u>.88</u>	<u>.96</u>	<u>1.00</u>	<u>1.15</u>
Net Profit	<u><u>P .80</u></u>	<u><u>P .80</u></u>	<u><u>P .91</u></u>	<u><u>P3.05</u></u>	<u><u>P3.33</u></u>

SN FISHERMEN'S COOPERATIVE  
 Siganggang, Siasi  
 Sulu, Philippines

CASH FLOW STATEMENT

(Amount in million pesos)

	<u>1st.</u>	<u>2nd.</u>	<u>3rd.</u>	<u>4th.</u>	<u>5th.</u>
<u>Cash In-Flow:</u>					
Cash on hand, Beg.	₱ .05	₱1.65	₱2.47	₱2.51	₱4.91
Collections	1.60	1.80	2.00	4.40	4.8
Grants	<u>1.00</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total cash	<u>₱2.65</u>	<u>₱3.45</u>	<u>₱4.47</u>	<u>₱6.91</u>	<u>₱9.71</u>
<u>Cash Out-Flow:</u>					
Cash Disbursed	₱1.00	₱ .88	₱ .96	₱2.00	₱3.00
Project 1. Whare- housing	-	.10	-	-	-
2. Vessel	-	-	1.00	-	-
3. Diversi- fication	-	-	-	-	<u>2.00</u>
Total out-flow	<u>₱1.00</u>	<u>₱ .98</u>	<u>₱ 1.96</u>	<u>₱2.00</u>	<u>₱5.00</u>
Cash on Hand, End	<u>₱1.65</u>	<u>₱2.47</u>	<u>₱ 2.51</u>	<u>₱4.91</u>	<u>₱4.71</u>

1986 INDEX PRICE OF FISH/KILO  
(Wholesale Canning Price)\*

<u>Species</u>	<u>Price</u>
Yellow Fin Tuna	₱12.00
Skipjack	10.00
Sardines and other species related	5.00
Big eyed scad, roundscad and other similar variety	5.00

---

\*Selected species only as they are the only ones bought by canning companies in Mindanao.



Selected species and the manner of catching them  
as practiced in the locality

Species

Gears

Anchovies, big eyed  
scads, round scads  
sarcines

Nets (day and  
nighttime operations); trawl  
lines.

Herrings

Bagnets with lights.

Tuna, skipjacks,  
mackerels, Indian  
mackerels

Nets (kulibo) with  
fish shelters as  
inducements.

slipmouth, moonfish

Encircling nets.

Bass, groupers, samarals

Hook & line, fishpots

Squids, cattlesfish

Bagnets, multiple  
handlines.

Marlin, swordfish

Hook & line with the  
aid of spears.

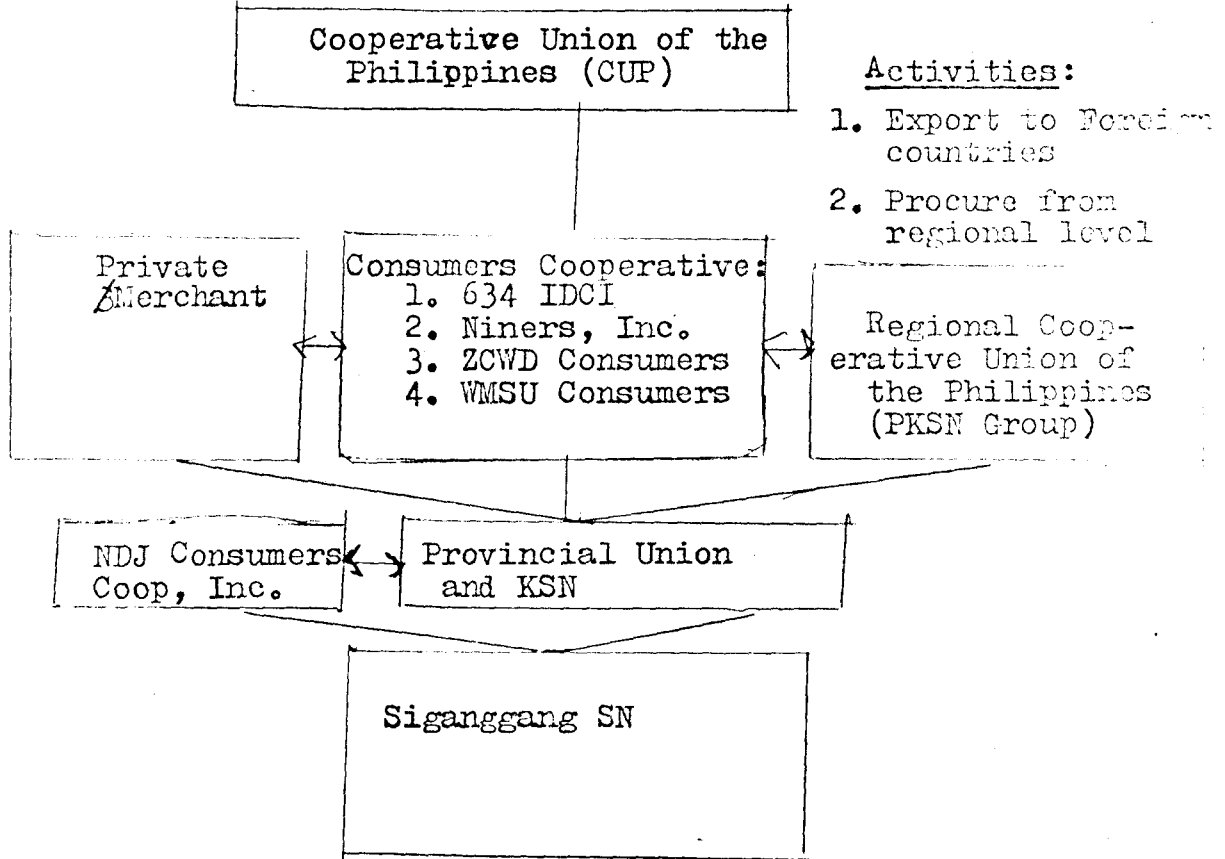
Sharks, stingrays

Sharknets, hook and  
line with spears.

Yellow fin tuna, skip-  
jack, Indian mackerel,  
round scad

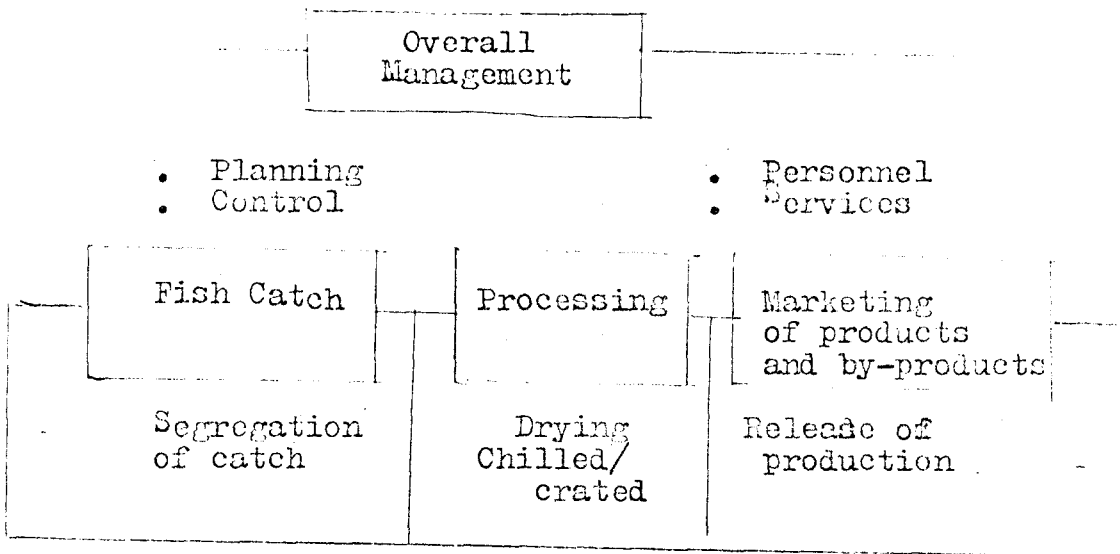
Fish corrals, either  
shallow or deep.

LINKAGES  
Flow Chart

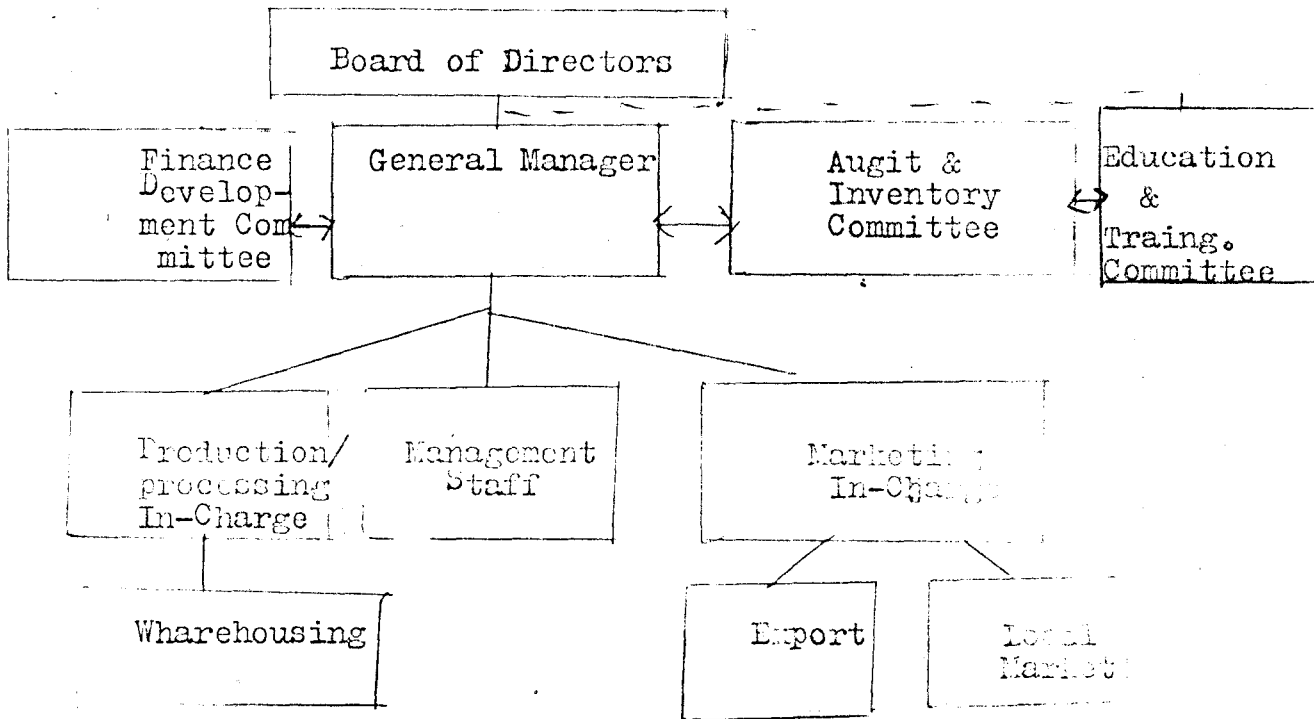


ORGANIZATIONAL STRUCTURE

Functional Division



Organizational Chart















PER CAPITA CONSUMPTION OF FISH AS OF 1982  
(Kg/Year)

52

	<u>NATIONAL</u>	<u>LUZON</u>	<u>VISAYAS</u>	<u>MINDANAO</u>
1. Fish	<u>40</u>	<u>36</u>	<u>49</u>	<u>46</u>
- Fresh	<u>25</u>	<u>22</u>	<u>31</u>	<u>28</u>
- Dried	<u>4</u>	<u>3</u>	<u>6</u>	<u>4</u>
- Processed Fish	<u>4</u>	<u>5</u>	<u>3</u>	<u>6</u>
Bagoong	2	2	2	4
Patis	n*	1	n*	n*
Others	2	2	1	2
- Crustaceans & Mollusks	<u>7</u>	<u>6</u>	<u>9</u>	<u>8</u>

B. PER CAPITA CONSUMPTION OF OTHER FOOD AS OF 1982

	<u>NATIONAL</u>	<u>LUZON</u>	<u>VISAYAS</u>	<u>MINDANAO</u>
1. Dairy	16	20	11	7
2. Poultry Meat	4	5	3	2
3. Eggs	3	4	2	2
4. Pork	7	9	4	8
5. Beef	1	2	1	n*
6. Carabeef	n*	n*	n*	n*
7. Fruits	30	30	33	27
8. Vegetables	27	33	16	24

VI. OTHER INFORMATION

A. TEN MAJOR LAKES OF THE PHILIPPINES

<u>NAMES OF LAKES</u>	<u>LOCATION</u>	<u>AREA (HA)</u>
1. Laguna de Bay	Rizal	91,136
2. Lanao Lake	Lanao Sur	34,304
3. Taal Lake	Batangas	26,368
4. Lake Mahit	Agusan del Norte	14,848
5. Lake Buluan	Maguindanao	5,888
6. Lake Bato	Camarines Sur	3,793
7. Pagusi Lake	Surigao del Sur	2,531
8. Lake Labas	North Cotabato	2,141
9. Lake Lanao	Camotes Is., Cebu	1,192
10. Lumao Lake	Agusan Sur	1,185

## PHILIPPINE FISHERIES PROFILE, CY 1985

## VII. OTHER INFORMATION

B. TEN MAJOR SPECIES OF FISH CAUGHT IN PHILIPPINE WATERS  
CY 1984

<u>SPECIES</u>	<u>QUANTITY (MT)</u>	<u>% TO TOTAL CATCH</u>
1. Tuna and tuna like species	<u>225,799</u>	<u>17.32</u>
- Frigate tunas (tulingan)	80,305	
- Yellowfin and big-eyed tuna (tambacol)	58,924	
- Skipjack (guliasan)	44,671	
- Eastern little tuna (oceanic bonito katchorita)	41,899	
2. Roundscad (galunggong)	131,583	10.10
3. Sardines (tunsoy, tamban)	109,027	8.36
4. Anchovies (dilis)	99,545	7.63
5. Slipmouth (sapsap)	66,784	5.12
6. Thread fin bream (bisugo)	41,321	3.17
7. Big-eyed scad (matangbaka)	37,513	2.88
8. Round herring (tulis)	35,125	2.69
9. Indian mackerel (alumahan)	33,192	2.55
10. Indo-pacific mackerel (hasa-hasa)	27,650	2.12

PHILIPPINE FISHERIES PROFILE, CY 1985....

MAJOR IMPORTS FOR 1985

	<u>QUANTITY</u> (Kgs)	<u>VALUE</u> (P)
A. <u>Frozen Spanish Mackerel,</u> <u>Hito and Others</u>	<u>5,099,425</u>	<u>16,064,044</u>
- Singapore	754	103,722
- Hongkong	2,314	250,858
- Japan	5,096,357	15,709,464
B. <u>Frozen Tuna</u>	<u>140,574</u>	<u>1,042,850</u>
- Indonesia	140,574	1,042,850
C. <u>Fishmeal</u>	<u>23,252,533</u>	<u>91,334,577</u>
- USA	905,213	4,552,690
- Peru	19,021,452	66,013,002
- Brazil	1,200,000	4,933,679
- Other Countries	2,125,868	15,835,206

MAJOR SOURCES OF FISHERY IMPORTS

1. Peru
2. Japan
3. Thailand
4. USA
5. Brazil
6. Australia
7. Taiwan
8. Indonesia
9. Singapore
10. Hongkong

A. FISH PRODUCTION, BY SECTOR (1975-1985)<sup>8/</sup>  
(In Metric Tons)

<u>YEAR</u>	<u>AQUACULTURE</u>	<u>MUNICIPAL</u>	<u>COMMERCIAL</u>	<u>TOTAL</u>
1985*	511,181	1,103,771	519,894	2,134,846
1984	477,887	1,089,046	513,335	2,080,268
1983	445,073	1,145,841	519,316	2,110,230
1982	392,348	978,362	526,273	1,896,983
1981	339,501	938,628	494,768	1,772,897
1980	289,166	894,610	488,478	1,672,254
1979	241,198	839,358	500,747	1,581,303
1978	216,655	857,909	505,840	1,580,404
1977	163,590	827,100	518,165	1,508,855
1976	159,292	725,994	508,197	1,393,483
1975	106,461	731,725	498,617	1,336,803

B. FISH PRODUCTION, BY SECTOR, BY REGION, 1985

1. AQUACULTURE FISH PRODUCTION

A) FRESHWATER FISH PONDS

<u>REGION</u>	<u>TOTAL AREA (HA)</u>	<u>PRODUCTION (MT)</u>
NCR	-	-
I	1,388	2,114
II	1,193	782
III	10,605	8,912
IV	373	174
V	79	23
VI	94	67
VII	-	-
VIII	28	12
IX-A	-	-
IX-B	127	45
X	296	182
XI	247	168
XII	<u>110</u>	<u>106</u>
TOTAL-----	<u>14,540</u>	<u>12,585</u>

B. FISH PRODUCTION (cont'd)

1. AQUACULTURE PRODUCTION....

B BRACKISHWATER FISH PONDS

<u>REGION</u>	<u>TOTAL AREA (HA)</u>	<u>PRODUCTION (MT)</u> <sup>9/</sup>
NCR	722	650
I	16,678	20,685
II	1,403	390
III	49,671	60,710
IV	27,809	17,806
V	13,090	6,086
VI	46,240	57,396
VII	6,247	3,587
VIII	6,657	2,806
IX-A	1,449	567
IX-B	14,563	7,812
X	3,987	2,367
XI	8,647	6,606
XII	4,567	3,782
TOTAL-----	<u>201,397</u>	<u>191,250</u>

C) PRODUCTION OF FISHPEN AND FISH CAGES

<u>REGION</u>	<u>FISHPEN</u>	<u>FISHCAGES</u>
NCR	5,981	-
I	-	-
II	-	-
III	-	-
IV	93,709	5,251
V	-	-
VI	-	-
VII	-	-
VIII	-	-
IX-A	-	-
IX-B	-	-
X	-	-
XI	-	-
XII	-	-
TOTAL-----	<u>99,690</u>	<u>5,251</u>

<sup>9/</sup> National Average Yield - 950 kgs/ha/yr

## PHILIPPINE FISHERIES PROFILE, CY 1985.....

## IV. FISH PRODUCTION

## B. FISH PRODUCTION (cont'd)

## 1. AQUACULTURE PRODUCTION.....

D) PRODUCTION OF OYSTERS, MUSSELS AND SEaweEDS

<u>REGION</u>	<u>OYSTERS</u>	<u>MUSSELS</u>	<u>SEaweEDS</u>
NCR	-	4,725	-
I	6,388	-	-
II	-	-	-
III	3,071	-	-
IV	3,675	6,844	1,890
V	25	-	-
VI	2,743	7,430	-
VII	-	-	18,512
VIII	-	100	4,557
IX-A	-	-	122,551
IX-B	-	-	19,875
X	-	-	-
XI	12	-	7
XII	-	-	-
TOTAL-----	<u>15,914</u>	<u>19,099</u>	<u>167,392</u>

IV. FISH PRODUCTION (cont'd)

C. COMMERCIAL FISHING VESSELS BY REGION <sup>10/</sup>

<u>REGION</u>	<u>NUMBER</u>	<u>TOTAL GROSS TONNAGE</u>
NCR	1,183	91,841.67
I	30	580.58
II	162	961.78
III	84	1,214.38
IV	452	9,371.17
V	167	5,163.75
VI	323	17,890.32
VII	208	3,933.49
VIII	105	1,665.01
IX	284	6,733.96
X	44	1,212.73
XI	268	6,969.15
XII	6	137.99
TOTAL-----	<u>3,316</u>	<u>147,675.98</u>

D. PRODUCTION OF COMMERCIAL FISHING VESSELS BY GEAR, 1985

<u>TYPE OF GEAR</u>	<u>QUANTITY (MT)</u>	<u>PERCENTAGE (OF COMMERCIAL CATCH ACCOUNTED FOR)</u>
Purse Seine	195,520	37.60
Otter Trawl	152,984	29.43
Bagnet	95,190	18.31
Others	<u>76,200</u>	<u>14.66</u>
TOTAL-----	<u>519,894</u>	<u>100.00</u>

<sup>10/</sup>  
Source of data: Licenses Division

## I. FISHERY RESOURCES

### 1. Marine Resources

a. Total Territorial Water Area (including EEZ)	-	220,000,000 ha
b. Coastal	-	26,600,000 ha
c. Oceanic	-	193,400,000 ha
d. Shelf Area (depth 200 m)	-	18,460,000 ha
e. Coastline (length)	-	17,460 km

### 2. Inland Resources

a. Swamplands <sup>1/</sup>	-	<u>357,000 ha</u>
- Freshwater	-	115,000 ha
- Brackishwater	-	242,000 ha
b. Existing Fishpond <sup>2/</sup>	-	<u>221,836 ha</u>
- Freshwater	-	15,311 ha
- Brackishwater	-	206,525 ha

### 3. Other Inland Resources

a. Lakes	-	200,000 ha
b. Rivers	-	31,000 ha
c. Reservoirs	-	19,000 ha

### 4. Other Supporting Facilities

a. No. of existing municipal fishing bancas	-	358,639*
b. No. of commercial fishing boat licenses processed	-	3,316

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<sup>1/</sup> Source of data: 1981 Philippine Forestry Statistics.

<sup>2/</sup> Source of data: 1984 Fisheries Statistics

\* Census of Fisheries, CY 1980



PHILIPPINE FISHERIES PROFILE, CY 1985

IV. FISH PRODUCTION

2. MUNICIPAL FISHERIES PRODUCTION, BY REGION, 1985  
(In Metric Tons)

<u>REGION</u>	<u>MARINE</u>	<u>FRESHWATER</u>	<u>TOTAL</u>
NCR	7,940	-	7,940
I	9,082	597	9,679
II	6,312	1,353	7,665
III	14,093	5,981	20,074
IV	115,682	260,997	376,679
V	101,049	3,679	104,728
VI	141,294	2,308	143,602
VII	26,618	-	26,618
VIII	37,182	289	37,471
IX-A	56,626	60	56,686
IX-B	147,900	1,117	149,017
X	67,700	2,658	70,358
XI	35,217	752	35,969
XII	<u>15,788</u>	<u>41,497</u>	<u>57,285</u>
TOTAL-----	<u>782,483</u>	<u>321,288</u>	<u>1,103,771</u>

3. COMMERCIAL FISHERIES PRODUCTION, BY REGION 1985  
(In Metric Tons)

<u>REGION</u>	<u>MARINE COMMERCIAL</u>
NCR	99,738
I	3,285
II	4,508
III	26,660
IV	72,549
V	36,503
VI	62,121
VII	57,838
VIII	6,049
IX-A	12,648
IX-B	64,740
X	15,067
XI	52,941
XII	<u>5,247</u>
TOTAL-----	<u>519,894</u>

II. FISHERIES CONTRIBUTION TO ECONOMY

1. Contribution to Total GNP<sup>3/</sup>
  - Current Prices - 3.8%
  - Constant Prices - 4.3%

TOTAL FISH PRODUCTION FOR 1985 <sup>4/</sup>

	QUANTITY (000 MT)	%	VALUE (B P)	%
a. Aquaculture	511	23.9	8.8	28.4
b. Municipal Fisheries	1,104	51.7	14.3	46.1
c. Commercial Fisheries	520	24.4	7.9	25.5
TOTAL-----	<u>2,135</u>	<u>100.0</u>	<u>31.0</u>	<u>100.0</u>

FIVE-YEAR FISH PRODUCTION TREND (1980-1985)

YEAR	QUANTITY (MT)	% INCREASE	VALUE (000 P)	% INCREASE
1985	2,134,846	2.62	31,054,217	31.76
1984	2,080,439	(1.41)	25,649,933	35.13
1983	2,110,230	11.24	18,981,459	26.00
1982	1,896,983	7.00	15,063,966	7.96
1981	1,772,897	6.02	13,953,798	19.83
1980	1,672,254	5.75	11,644,350	10.51

EMPLOYMENT

a. Inland Fisheries -----	222,000 persons	<sup>5/</sup>
b. Municipal Fisheries-----	773,042 persons	<sup>6/</sup>
c. Commercial Fisheries-----	<u>44,618 persons</u>	<sup>5/</sup>
TOTAL -----	<u>1,039,660 persons</u>	

<sup>3/</sup> Preliminary estimate as of May 1985.

Source of data: NEDA, Statistical Coordination Office, National Accounts Staff, NEDA

<sup>4/</sup> Estimate

Source of data: Fisheries Statistics Section

<sup>5/</sup> Fisheries Statistics, CY 1984

<sup>6/</sup> Census of Fisheries CY 1980

PHILIPPINE FISHERIES PROFILE.....

III. EXTERNAL TRADE <sup>7/</sup>

	1983 (P M)	1984 (P M)	1985 (P M)
Fishery Exports	1,593.0	2,179.0	3,173.0*
Fishery Imports	<u>110.9</u>	<u>50.3</u>	<u>118.1**</u>
Balance of Trade	<u>1,482.1</u>	<u>2,128.7</u>	<u>3,054.9</u>

MAJOR FISHERIES EXPORT IN  
TERMS OF VALUE, 1985

	QUANTITY (MT)	VALUE (P 000)
1. Shrimps	7,718	1,058,474
2. Tuna	34,502	1,031,442
3. Seaweeds	28,270	440,943
4. Shellcraft articles	2,695	212,223
5. Milkfish	1,486	56,407
6. Shark Liver Oil	468	51,946
7. Ornamental Shells	985	25,156
8. Cuttlefish	94	7,270
9. Misc. Fish (Frozen/Chilled)	125	1,800

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<sup>7/</sup> Source of Data: NCSO

\* As of November 1985

\*\* Preliminary data

TABLE C. QUANTITY OF MARINE FISH LANDED BY  
MUNICIPAL FISHING COOPERATIVES  
BY PROVINCE AND REGION  
1980-1984

Units: Metric Tons

	1980	1981	1982	1983	1984
...	702,405	709,689	703,014	770,528	769,075
...	12,033	11,757	10,363	9,159	9,010
...	2,133	2,653	325	330	883
...	4,546	4,015	2,025	2,325	2,164
...	1,972	1,927	2,917	3,910	3,400
...	3,392	5,131	4,973	3,923	4,760
...	3,330	15,139	11,135	6,156	7,644
...	3,022	14,453	10,602	6,053	7,405
...	353	746	507	103	149
...	12,555	12,991	16,222	12,715	15,739
...	5,980	6,307	5,833	7,030	8,652
...	3,565	4,634	5,338	4,633	5,019
...	2,940	2,000	2,826	2,545	2,057
3) ...	5,070	6,401	7,821	7,552	7,529
...	5,070	6,401	7,821	7,252	7,529
...	93,642	97,950	132,633	113,748	140,655
...	2,913	5,136	3,548	3,473	3,917
...	4,265	5,312	12,658	6,518	12,684
...	37,159	32,302	47,079	24,228	23,214
...	10,705	5,330	16,515	4,637	5,602
...	3,234	1,564	1,243	2,646	4,004
...	23,804	28,783	37,256	51,147	73,049
...	4,245	9,671	5,304	9,394	8,095
...	4,064	7,844	6,816	7,543	8,122
...	2,552	2,008	2,344	4,062	1,968
...	121,905	111,097	76,880	86,286	87,002
...	12,278	18,089	26,757	24,319	22,843
...	25,748	19,790	15,308	14,746	17,704
...	2,510	1,267	1,848	1,624	1,562
...	39,668	37,280	15,074	22,500	22,233
...	10,818	7,356	9,580	7,406	8,928
...	30,884	27,315	10,313	15,701	13,732
...	103,536	106,692	119,489	154,484	139,261

Region/Province	1980	1981	1982	1983	1984
Hilo .....	42,272	48,404	49,197	56,324	31,701
Negros Occidental .....	23,493	20,930	40,429	83,995	79,150
Antique .....	17,524	18,248	15,520	12,142	16,469
Aklan .....	6,435	5,300	5,473	4,159	3,855
Capiz .....	7,158	6,041	7,591	5,484	5,404
Guimaras Sub-Province .....	1,664	1,539	1,279	1,330	1,282
Region VII .....	49,230	49,868	25,380	25,020	24,234
Cebu .....	12,104	11,602	11,048	13,037	12,876
Bohol .....	17,848	17,039	9,958	8,654	6,462
Negros Oriental .....	17,012	17,228	4,155	2,763	3,679
Siquijor .....	2,236	1,959	1,539	1,563	1,037
Region VIII .....	55,539	35,925	34,562	34,794	32,210
Leyte .....	9,550	9,294	9,691	9,769	10,031
Southern Leyte .....	4,262	4,166	2,499	4,328	4,113
Eastern Samar .....	3,053	2,950	2,930	2,777	2,630
Western Samar .....	15,374	16,264	11,864	9,950	8,950
Northern Samar .....	1,794	2,020	9,960	3,329	3,130
Biliran Sub-Province .....	1,486	1,631	1,018	3,621	3,456
Region IX-A .....	140,421	75,151	66,685	54,926	52,504
Basilan .....	53,591	39,424	10,771	13,965	17,067
Sulu .....	13,509	14,001	47,783	26,176	26,781
Tawi-tawi .....	73,331	21,126	8,331	9,785	9,056
Region IX-B .....	83,010	78,815	101,316	144,606	147,249
Zamboanga del Norte .....	17,683	37,625	44,590	70,538	71,669
Zamboanga del Sur .....	65,327	41,190	56,726	74,068	75,580
Region X .....	53,077	55,314	57,397	54,005	71,845
Agusan del Norte .....	3,234	2,566	2,353	2,488	2,740
Misamis Occidental .....	2,497	2,393	6,843	2,221	2,475
Misamis Oriental .....	16,175	15,371	8,434	8,961	9,562
Surigao del Norte .....	30,410	32,343	36,254	48,348	53,847
Carniguin .....	761	2,641	3,513	1,987	2,921
Region XI .....	33,261	35,279	32,093	34,179	31,496
Surigao del Sur .....	4,207	6,900	6,029	6,822	6,850

BEACHHEAD

GEAR T O T A L BAG NET SEIKE PUSH NET FURSE SEINE RING NET  
 Number Tonnage Number Gross Tonnage Number Gross Tonnage Number Gross Tonnage Number Gross Tonnage  
 TONNAGE CLASS

TOTAL	201	3,183.82	142	2,201.91	1	14.64	1	8.50	3	365.89	46	592.56
POWERED	195	3,133.23	141	2,201.04	1	14.64	1	8.50	3	365.89	41	485.69
NON-POWERED	6	50.54	1	3.87	-	-	-	-	-	-	5	48.87
1 - 4.99 POWERED	21	89.36	12	49.50	-	-	-	-	-	-	9	35.63
NON-POWERED	2	7.40	1	3.87	-	-	-	-	-	-	1	3.53
5 - 9.99 POWERED	47	342.78	32	240.50	-	-	1	3.50	1	8.29	13	95.49
NON-POWERED	3	23.70	-	-	-	-	-	-	-	-	3	18.70
10 - 14.99 POWERED	62	783.29	50	643.03	1	14.64	-	-	-	10.75	10	127.17
NON-POWERED	1	14.44	-	-	-	-	-	-	-	-	1	14.44
15 - 19.99 POWERED	14	235.27	11	136.13	-	-	-	-	-	-	3	50.14
NON-POWERED	-	-	-	-	-	-	-	-	-	-	-	-
20 - 24.99 POWERED	15	336.64	11	243.49	-	-	-	-	-	-	4	17.00
NON-POWERED	-	-	-	-	-	-	-	-	-	-	-	-
25 - 49.99	34	1,151.32	24	777.71	-	-	-	-	3	333.20	2	75.83
50.00	1	54.73	1	54.73	-	-	-	-	-	-	-	-
140.00	1	133.89	-	-	-	-	-	-	1	133.89	-	-

ION 9

Region X-2.C.

S P I C I A N S

SPECIES	QUANTITY	MONTHS															TOTAL
		JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL			
Shade, Milkfish (Bangue)	487	33600	24503	9326	16721	30537	31002	34001	19890	23848	33402	25444	22825	22825	30447	36573	379923
Milkfish (Bangue)	487	33600	24503	9326	16721	30537	31002	34001	19890	23848	33402	25444	22825	22825	30447	36573	379923
Sizeri Shads (Kabasi)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Flounders, halibuts, etc.	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Fishes (Malabaw, Lubutik, Dapang sinalar, dapang silar)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Berches, stream, snappers, sole etc.	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Sea catfishes (handul)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Lizard fishes (malaso)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Sea bony (Palos, Panduren)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Gropera (Lapu-lapu, volanu)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Sea bage (apnab)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Psyllips (Gacelo, Selicun-bukid)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Shapper (Kaya-kaya)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Threadfin beams (pinang)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Kraduds (amaral)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Sillago Whiting (asobos)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Perletes, glassfish (bangray)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Surgeon fishes (labuhin)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Group 2 and Part 1 fishes (Lorol)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Slipper with (Sapap)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Volanus (Malapap)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Conchines (Garamute)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Conch (bigs)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Conch (shabita)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Squid fish (Bayang)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Squid fish (Klang)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Platend (bunge)	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007
Mudfish	471	33600	3307	2007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007	3007

1985

JAN FEB MAR APR MAY JUN JULY AUG SEPT OCT NOV DEC

TOTAL

1985

TOTAL

1985

TOTAL

1985







Region IX-A-C

APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	dec
50030	14311	5167	6535	17087	19397	13940	10236	13215
20030	14311	4567	7676	17087	19397	13268	9707	13215
			917			670	714	
20001	40200	36000	7716	33101	23888	24157	30007	16841
52476	34992	27190	1628	37230	30489	17168	16784	13945
3681	5858	9200	202	1871	3927	9019	10861	3026
							2732	
								17000
								19000
								170000
								170000
								1790000
								731000
								5000
								4917000
								2000
								1087000
								74000
								810000
								760000

SPECIES	GEARS
Lobster	
Spiny lobster (Dakikan)	
Shovel nosed or slipper lobster	
Shrimps, Prawns	
White shrimp (hibong puti)	
Paper prawn (Supeo)	
Andeavor prawns (Suhae)	
Beetles (alimang)	
Miscellaneous (Marine Crustaceans)	
Sea Manties (Tatampal)	
Abalones, Inkles, Conchs	
Falanges	
Bivalv like molluscs	
Cruster	
Cruster (Palaba)	
Mussels	
Green mussels (Tamong)	
Brown mussels	
Scallops	
Giant, Cockton, and shell	
Giant clam (Pobitoc)	
Black clam (Lobong)	
Mussels (Malon)	
Operant shell	
Troch	
Copie shell	
MBP	
Account shell	
Sea	

S P A C I E S - S E A S O N

		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	GR.
Scrub, Callitriche, Celastrum	23570-700	122212	142202	242267	157049	226626	127226	201729	192927	229227	171208	182732	148255
Spin (Pencil)		100272	823267	912227	222220	310032	212227	133020	102221	122221	202221	222221	222221
Distichlis (Common)		52222	23222	152226	122222	222222	262222	222222	222222	222222	222222	222222	222222
Stomus (Pencil)		22222	22222	110222	222222	222222	122222	222222	222222	222222	222222	222222	222222
Marine Tortise													
Green Tortise													
Leather Bag													
S. Urechin etc.	26221000												26221000
S. Urechin													
S. Cucumer	25222												25222
Ally Spin													
Sponges	110220												5000
Seaweeds and Miscellaneous aquatic Plants	104222												104000
Gozo (Eucheuma spp.)													
Galvanic Bagat													
		122225											104000
No. of Units Landed	2622192	102222	100022	64222	122222	170022	141222	201222	201222	200222	202222	202222	202222
Non Bur	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222
Blowing Ymo	11222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222
Non Power	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222	222222
Tomatoe													



1986  
Monthly Production

Region	JAN.	FEB.	MARCH	APRIL	MAY	JUNE
	Ma Min	Ma Min	Ma Min	Ma Min	Ma Min	Ma Min
BASILAN I	405074 019748 209674	390012 651346 267334	391490 584621 189481	389060 66910 27880	602249 1321541 170592	269619 80030 57044
BASILAN II						
SULU I	15376 17845 1969	10883 11188 1302	64409 81125 16166	48510 63230 14720	29993 222110 192117	102481 145292 22811
SULU II						
TAWI-TAWI I			160873 144024	13544 107970	472775 846767	76720 176570 79225
TAWI-TAWI II						
TAWI-TAWI III						
ZAMBO. NORTE I	784577 1718997 933470	797576 1428237 824724	132171 3820994 250423	1877407 1619488 324133	11,492985 3,260,056 1673101	1024670 436,580 811850
ZAMBO. NORTE II	80229 2022,000 231104	671704 197095 305078	1,074732 2,048971 236108	1,01080 1,071620 594740	1,712,872 1,241,623 428268	137,240 1291760 41798
ZAMBO. NORTE III						
ZAMBO. SUR I	1722314 181412 11745	1511030 443820 27025	1,533732 2,10773 20910	1,57340 157340 106142	1,81942 13,043 83961	1,01668 2,26599 14374
ZAMBO. SUR II						
ZAMBO. SUR III	696477 149149 49111	211535 157473 71080	211535 89278 90481	24770 61420 61420	86824 168101 93919	204410 75779 75779
ZAMBO. CITY						

Schedule of Loan Repayment

RCDAO IX

Annual Payment

₱100,000 at 5% interest payable  
in 10 years ,.....₱ 1,500.00 Interest and  
Principal

DEVELOPMENT BANK OF THE PHILIPPINES

₱387,000 at 36% interest payable  
in 25 years . ' 1 . . . . . , 21,052.80 Interest and  
Principal

TOTAL PAYMENT OF INTEREST AND PRINCIPAL      ₱22,552.80

COMMENT

If you take a look at the operational budget and cash flow statement, there is sufficient fund to cover for this amount.

Salaries: Personnel (IN PESOS)	Salary per month	Per Year
<b>Salaries:</b>		
Chief of Vessel	1500-	18000-
Asst. Chief of Vessel	1000-	12000-
Crew: 15 heads @ \$800.00/person	12000-	144000-
Quarters Officers: 2	2600-	31200-
Social Security Insurance: Computed at 10% of basic salary	1710-	20520-
		225520-
<b>Allowances:</b>		
General Manager	1000-	12000-
5 members of the Bd. of Directors @ \$500. each	2500-	30000-
9 Committee members @ \$200 each	1800-	21600-
		63600-
<b>Expenses: Operation of Vessel</b>		
Fuel: diesel @ \$6.00/liter 100 liters/night	13700-	164400-
Gasoline: 10 liters @ \$7.00/liter for 22 nights	1540-	18480-
Food: 17 persons @ \$20.00/day	20950-	251400-
	13700-	176880-
<b>Marketing cost:</b>		
Pumpboat operator's		
Salary: \$90/day for 30 days	900-	10800-
Social Security Insurance	90-	1080-
Fuel: \$40/day x 22 days	880-	10560-
Labor and other incidental expense	2000-	26400-
		48840-
<b>Depreciation:</b>		
1 Fishing boat (Boonig) including all the accessories at an estimated life of 10 years - cost \$310,000.-	2916-	35000-
One unit service pumpboat w/ engine and accessories estimated to last for 5 years - cost \$40,000	666-	8000-
Power generator with accessories - 5 years (cost \$25,000-)	416-	5000-

Depreciations, continued...

	per month	per annum
Bag net (Kulbo): One set estimated to last for 5 years (cost \$10,000-)	2000-	24000-
Slip net - for 5 years (cost: \$10,000)	1666-	20000-
10 units wooden boxes with steep form, estimated to last for 3 years (cost: \$16,000-)	444-	5333-
		<u>79333-</u>

Others (optional)

4 units fish shelters (precar) estimated to last for 3 years (Cost: \$15,000 @ \$10,000-)	2777-	33333-
---	-------	--------

Repair and Maintenance

estimated at 10% of the cost.

<del>per annum</del> Fishing boat (Basing)		35000-
Service boat		4000-
Bag net		12000-
Power generator		2500-
Fish shelter		10000-
		<u>63500-</u>

Processing and Drying:

10 bags of salt/cash @ \$1500/bag	3300-	39600-
<del>the same amount of salt</del> paid labor	2200-	26400-

Rental of space: For bodega	250-	3000-
Miscellaneous/contingencies		10000-

# ASSUMPTIONS:

Average catch per day of operation: 800 kilograms

Number of days of operation/month - 22 days

Average price of fish (under wholesale price) \$8.00

$$800 \times 22 = 17,600 \text{ kilograms (catch/month)}$$

$$\frac{17,600}{12} = 1,466.67 \text{ kilograms (catch per year)}$$

$$17,600 \times \$8.00 = \$140,800 - \text{Revenue per month}$$

$$\begin{aligned} & \times 12 = \\ & \$1,689,600 - \text{Gross income per year} \end{aligned}$$

## Expenses:

Salaries, etc.	\$225,520 -	
Allowances	63,600 -	✓
operation - diesel	176,880 -	
Marketing	48,840 -	
Repair + Maintenance	63,100 -	
Depreciations:		
Equipment	79,333 -	✓
Others - Fish Shelter	33,333 -	✓
Rental - Storage space	30,000 -	✓
Miscellaneous	10,000 -	709,000 -
Net Income - of tax		\$ 985,594 -
		<u>\$ 985,594 -</u>





FIRST

ICA TRAINING COURSE FOR STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA

NEW DELHI / BANGKOK / TOKYO / SEOUL

1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

Project Title: Project on Rubber Plantation in selected  
Areas in Ruwanwella AGA Division, with  
Country: special emphasis on production of Quality  
Smoked Rubber Sheets  
Sri Lanka  
Prepared by: Mr P.L.Gunasekera

Funded by the Government of Japan  
and

Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.

# FIELD WORK REPORT

SRI LANKA  
KEGALLE DISTRICT  
RUWANWELLA A.G.A. DIVISION

TRAINING COURSE FOR STRENGTHENING MANAGEMENT  
OF  
AGRICULTURAL CO-OPERATIVES  
IN  
SOUTH EAST ASIA

STUDY OF THE EXISTING SITUATION  
OF RUBBER PLANTATION  
IN SELECTED AREA  
OF  
RUWANWELLA A.G.A. DIVISION  
WITH  
SPECIAL EMPHASIS ON PRODUCTION  
OF QUALITY SMOKED RUBBER SHEETS  
P. L. GUNASEKARA

FOUNDED BY THE GOVERNMENT OF

JAPAN

EXECUTED IN COLLABORATION WITH I.C.A.  
MEMBER ORGANIZATION

IN

India

Thailand

Japan

AND

REPUBLIC OF

KOREA

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## A C K N O W L E D G E M E N T

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P. L. Gunasekera

14th February, 1987.  
Ruwanwella M.P.C.S. Ltd,  
Ruwanwella - Sri Lanka.



CHAPTER I

Summary

The project involves production of smoked sheet rubber in order to up-grade the quality of sheet rubber of the selected area in Ruwanwella A.G.A division and consequently it will help in generating more income to farmers. The latex to be used in production process will be supplied by the rubber small holders in Imbulana, Siyabalawala and Niwumhella villages. It is estimated that, the quantity of latex necessary for one day (Kg.750), can be supplied from 225 area of rubber which is less than half of the existing grown acreage in the area (Rubber grown acreage 485). So that it is expected that obtaining of raw material will not be a difficult task in future.

The market study reveals that the smoked rubber faces a challenge in a world market as well as the local market. As there are various organizations engaged in exporting smoked sheet rubber, it will encourage the small producers of smoked rubber in the production. Based on the income statement, it is expected that the project will generate profit after paying of bank instalments and interest. The project being a viable, bankable and profitable one of the successful results could be expected by implementing it.

As the society is expect to payback a considerable amount of profit as a second payment among small holders who supply latex to the centre, the project would be a great advantage to the rubber small holders in the area.

CHAPTER 2 . BACK GROUND

2 . 1 . O V E R A L L S I T U A T I O N

The weather, soil condition and average annual rainfall (185"-200") of the Project area apt to rubber cultivation and hence it becomes the major crop. Even though there some state rubber estates, more than 2/3, belong to small holders as the national figure.

Almost all small holders cultivate their lands, obtaining government grants, which is accounted as Rs. 10,000/- per one acre. But it is estimated that; at least Rs.16,500/- per acre for rubber plantation is essential, due to the low income of Farmersthey are unable to fill this gap and consequently they are not doing the cultivation accordance the instruction of extension officers. Except. this, most of the Farmers misuse the grants instead of using in rubber plantation. Non-application of fertiliser, non cultivation of cover plants, lack of soil conservation methods are also common to all Farmers and therefore. they are unable to get good harvest.

The normal barinr period of well grown rubber plant is ranges from 5 - 6 years. But due to the negligence etc., about 90% Farmers are unable to get the harvest within this period and the baring period extends about 6 - 10 years. Not only the delay, but also the rubber plant hardly gives exact latex what it can give. The average harvest per acre in this area varied 2 - 3 Kgs. per day and it is estimated that the annual harvest as 400 - 500 Kgs.(except on rainy days and leave falling period) which is very low compared with the exact yield of 4 Kgs. latex from an acre per day. Even though, the extension services recommend to tapping for latex once in two days, the Farmers used to practise it daily, because to get even a megre income daily for their living. Daily tapping causes to decrease the quality as well as quantity of latex so far.



The tapping of small holding has mostly done by the Farmers themselves, while some have done by labourers. Though they are used to this task, very often they injure the Cambium and consequently there would be protruding nodes on the surface of the tree which causes to reduce the production of latex drastically. Due to scarcity of skilled labour it is difficult to overcome this problem.

Most of the small holders produce smoked rubber sheets while some market latex, to the crepe rubber producers. The conducted survey reveals that there are not proper processing facilities and at present out of 51 Farmers only 4 have rubber rollers, but without fully equipped smoked houses.

In marketing the Farmers do not receive a reasonable price. Though the private traders as well as the Co-operative Society in the area, engage in purchasing of rubber sheets, the co-operatives are unable to compete with the private sector due to various reasons.

## 2: 2. AREA OF THE PROJECT

The area of Project consist of 3 villages namely; Imbulana, Niwunhella, Siyambalawala in Imbulana Grama Sevaka division; in Ruwanwella A.G.A division of Kegalle District. (See map 1) The coverage extent of the Project is about 485 acres of rubber plantation.  
(annexure 1)

The number of house holds of the area are 589 and at present the population is about 2450. While very less amount of people engage in government occupations, most of the people in the area predominantly live on agriculture. Among the various crops such as; rubber, coconut, paddy and minor export crops, rubber plantation assist in great deal to Farmers in their -

livelihood. The land utilisation pattern reveals that there is a mixed economy in the Project area. Even, in this mixed economy, rubber being the important crop the Farmers interest to improve the quality by processing it in proper manner.

### 2: 3 PROBLEMS FACED BY THE FARMERS

- i. The average size of land is about 2.5 per one family in the survey area, and within that extent the Farmers couldnot fulfil their all requirements. As the crown lands in very few extent; utilization of lands for further extension will be, very difficult task in future.
- ii. The major source of income being the producing of smoked rubber sheets, and due to the low quality of the production they receive the low price. Due to the traditional and primitive methods practised in production and the ignorance caused to this situation.
- iii. Lack of proper equipments and smoked houses also causes to production of low quality rubber sheets. Due to the poverty, the Farmers unable to invest on building of smoke houses and installation of machinery.
- iv. It is common to all farmers the misusing of Government grants instead of using it properly in rubber cultivation. Because of the less income, the Farmers could not invest money on application of fertiliser and other cultivation practices in time cause to reduce the growth of the plantation.

Paddy cultivation not even sufficient for their depending and it should be improved by cultivating better seeds and introducing better cultivation practices. Existing extension services are not efficient to upgrade it.

Due to the lack of proper co-ordination among the various Organizations which engage in rural development activities the villagers are unable to get the exact benefits to them.

Lack of proper and faithful marketing facilities cause, lessen the income of Farmers for their productions.

Scarcity of labour in rubber industry; specially in tapping latex.

## 2.4 NEED AND JUSTIFICATION FOR THE PROJECT

### 2.4. 1 - General

Among three major commercial crops which bring the large amount of foreign exchange to Sri Lanka rubber plantation plays a vital role of our economy. It occupies 525000 acreage of land out of 1620819 of total extent of land Sri Lanka. The most remarkable feature one could be seen in rubber plantation is the 2/3 of rubber growing lands are belong to small holders.

Though the state sector tend to produce crepe rubber out of their latex, small holders intend to produce smoked rubber sheets which utilize more and more for industrial purposes. Lack of highly sophisticated technical know how, Sri Lankans have to produce Crepe rubber<sup>and</sup>/smoked rubber sheets; instead of producing finishing goods out of latex. At present, the quantity of crepe rubber; producing by Sri Lanka and other Countries satisfy the demand of World Market, we have to focus our attention to produce more smoked rubber sheets and upgrade it's quality. It will gain the more foreign exchange to country, than the low graded rubber sheets receive. The increment of National income facilitate to the development activities of the country.

Not only increase of national income, but also it will help to upgrade the poor small holders life condition through gaining higher income to them.

### S P E C I F I C

The Farmers in the Project Area faced several difficulties due to the lack of income. Their income generating activity which is production of smoked rubber sheet stagnate due to lack of Proper Processing facilities. Instead of processing grade 1 rubber sheets, they loss (considerable amount of money daily because they produce low grade rubber<sup>and</sup> they are unable to overcome this problem due to poor investment capacity. So that there should be an external helping hand to them to upgrade their livelihood by upgrading their production. In order to achieve these objectives, it is very important to form a rubber smoked houses for small holders. The government of Sri Lanka also formed this type of smoked houses in Kalutara, Ratnapura and Kegalle Districts where predominantly rubber growing areas.

In relation to transportation, member participation and some other criteria number of small smoke houses, located at different places more viable than centrally located large smoke houses. By formation of this type of smoke houses, the latex buyers are unable to exploit the Farmers which is already happening in the area.

## CHAPTER 3 - PROJECT

### 3.1 O B J E C T I V E S

1. In the Ruwanwella constituency, among the rubber plantations the chosen areas (Syambalawela, Imbulana, Newunhella) on the condition to improve the rubber plantation, to increase the yield from  $2\frac{1}{2}$  Kgs. upto 4 Kgs.

2. To raise the grade from ~~3-4-5~~ up to grade 1, we shall pave way methods.

3. According to the abovementioned two facts to increase the income At present, a Farmer receives Rs. 14/50 per Kg. This will be increased to 18.50, Rs. and By this increase annual income per acre will increased by RS. 1485/- (Annexure 2)

4. To build a well organised organisation for marketing.

5. As the Farmers get a very low income, their economical condition is very poor. In future, to erase such difficulties, we shall organize a saving scheme.

3.2 - AREA OF OPERATION

Under this project, the project area and operation area will be the same because it is being a small project. (Please see chapter 2-2.) The area of operation located in 2½ miles far from the Ruwanwella town.

3.3. - PROJECT COMPONENTS

3.3.1 - Processing

The serious problem which small holders faced at present, is that they produce low grade rubber sheets. Therefore, plans should be made to raise the grade of the production. To upgrade the production of low grade of the production. To upgrade the production of low grade rubber, steps should be taken. Beside, these farmers get an increased income, the export of low grade rubber will lessen and the high grade will increase so that the country will achieve a good Foreign Exchange.

Some may argue that this sort of Project unit may fail to bring Foreign Exchange but if such a number of processing Centre, are opened it will be a great success. Hence, the project will be an example. The chief idea behind organising such project will induce the farmers to bring up their 3 - 4 - 5 grade rubber products up to No.1

Thereby, we expect to put up a smoking centre approved by the Sri Lanka Rubber research Institute. We expect to do this task in two methods. The first method is the society will accept the latex from the members, smoke it and market it for members.

The second method is that the society will get the non-smoked rubber from farmers when they do not wish to market their latex directly to society. The society shall have sheets and ~~smoke~~ smoke them. In due course this practice will be discontinued and members will be motivated to joint smoking and joint marketing.

### 3.3.2 - Marketing

Up to this date the Farmers market their rubber sheets to private dealers, when the Commissioner of commodity purchase publishes the price of rubber for the current day through News Papers but the private dealers purchase them far below the rate prescribed. There is a difference of Rs.1/- or Rs. 1/50 between the prices of Colombo and the price of a private dealer offers to Farmers. This profit goes into the hand for the production in spite of all these, they get a scanty income. To avoid such a vast difference we buy the latex from the Farmer, so that the price between the society's buying and selling is very small. Further the society charges only the transport expense. Society will pay market rate at the time of delay in cash, after one year the project will be distributed as additional Payment except keeping some profit for statutory funds and dividends.

At present, the Farmers have to incur 25 cts. to 50 cts. expense for handling. When they prepare the sheets but by selling through the processing centre they save that handling charges.

The society expect to sell these rubber sheets purchased from Farmers to the Sri Lanka rubber Union which is formed by M.P.C.SS and rubber production Societies by investing shares.

If there are Farmers who have the facilities to produce rubber sheets in the house, the centre to buy rubber from them. The Farmers get more convenience and price from this marketing than getting from Private dealers.

The private dealers deceive the farmer by grading the rubber sheets to low grades. Thus the farmers get less money to evade defects in future we expect to form a marketing process with better organization.

### 3.3.3. - Extension

Though the Farmers do rubber plantation as an habitual custom, they do not possess technical knowledge because of their illiterate situation. They don't follow the modern technical methods. They don't make use of the aid given by the Government properly. Thus they don't expose any enthusiasm to develop it and also they don't have the knowledge to get the benefits offered by some institutions.

Though different Departments function for the development of paddy, rubber and other crops, there is no Institution to unite the farmers to get the benefit.

(The extension services hope to direct the farmers since rubber planting stage up to yielding and marketing stage so far.) We also expect to adopt the same method to other crops also. Apart from this the arrangements are taken to aid the Farmers through the different institutions in this area, and take action to have a better knowledge about Co-operative movement.

#### CHAPTER 4

##### DETAILS OF PROJECT COMPONENTS

###### 4.1 - Manufacturing Process

It is expected to construct a Rubber Smoke Centre 49' x 38'. It's capacity is about 600 sheets per day (see annexure 3/A) According to the survey there are 485 acres of rubber lands, we can get the latex for the next twenty years. There are further forty acres which will come to yield next year and after. To make 600 sheets, we need 750 Kgs. latex. (600 x 1 1/4.) At the rate of 2 or 3 Kgs. per acre in this area we need at least latex of 300 acres of land. According to such calculation, if we get latex from 70% of the land, we will be able to achieve the target successfully. According to the survey, 51 farmers assured that they would like to give the latex to this society. The land possessed by these farmers aggregates to 175 acres.

When we consider the yielding of 51 farmers for the last five years, it is obvious that as we could get for the next twenty years a good amount of latex harvesting thus we keep the Project in stable without any risk.



Yield in last Five years in Project Area (Kgs. per Acre) Table 4.1

No. of Farmers Surveyed	No. of Acres	Y	I	E	L	D	Average yield per Acre
		82	83	84	85	86	
51	175	85,000	90,000	87,500	82,700	87,500	500(Approx.)

Though the quantity of latex received may decline and rise according to the rain, it is certain that we will be able to get the needed production.

The smoking centre which is proposed is of two parts.

1. To smoke sheets out of latex
2. To make sheets with the smoking room (see annexure 3) Apart from this a room for office in the office itself a place for store smoked sheets.

In the part where sheets rubber is made of latex, there are the sheet roller and a diamond roller. On the other side the Coagulation of latex is done in Aluminium dishes. (Annexure 4)

The rubber sheets that are compressed by diamond rollers are smoked in the smoke room. The temperature needed is supplied by the external furnace. The capacity is about 600 sheets of the smoke room.

To smoke the sheets that different procedures. They are as follows.

4.1.1 - Buying the latex brought to the centre and also to calculate of the Drying Rate

When the Farmers bring the latex to the centre, we measure the latex and find the drying rate by using "metrolac". According to the reading in the metrolac, we can assume the amount of dry rubber (See annexure 4B) According to the dry rubber/<sup>quantity</sup> the farmer is given his due.

#### 4.1.2 - Making Sheet Rubber Out of Latex

It should be mixed equal quantity of water to the latex and add Sodium - bi-sulphate to remove off the stain. By admitting one tablespoon of this ~~chemical~~ to one cup of water, it will suffice for 25 Kgs. or 30 liters. If the Farmer had already admitted washing<sup>Soda</sup>/or Sodium Sulphate purposely to avoid coagulation, there is no need further admitting.

After water being mixed to the latex, it is filtered through 40 x 60 gauge monel mesh. Then 4 or 5 lit. is put in to each dish. Prior to these procedure the dishes are washed well. Then formic acid is admixed. The Formic Acid solution can be made in the proportion water and acid 84%. From this mixture 200 m. lit. is put into a dish and is stirred well. Then the foam is removed by the aid of pad, it is kept for three hours to coagulate and the sheet is taken off from the dish and flattened well by placing it on a table.

#### 4.1.3 - Compressing of the Sheets

The sheet that was flattened by hand is being compressed by passing it through the roller three times. The thickness of the sheet should not exceed more than 1/8 th of an inch (2.5 m.m.). Then it is rolled once through the diamond roller. Then the size of the sheet must be approximately 43 cm x 60 cm. ( 22" x 17"). Then the most important procedure is to wash the sheet well. If there is no possibility of flowing water, it should be repeatedly washed in clean water. By washing well the stain and dirt will be avoided. Then it is hung to dry in the atmosphere. If there is no possibility of putting it into the smoker room on that day itself, the sheet be kept in water.

4.1.4 - Smoking

The sheets taken off from the smoke room should be protected from moisture. A wooden stage is made to the height of one foot. The rubber sheets should be arranged so that there should be a room between each bundle to get air.

4.2 - THE FACTS TO BE CONSIDERED TO MAKE GOOD RUBBER SHEETS

In spite of a good smoke room and good equipment, it may quite impossible to make a good rubber sheets. Therefore, serious concerned should be owed to the following facts.

1. From the stage of tapping to the stage of selling cleanliness should be the chief concerned.
11. Every equipment must be perfectly clean, there is one reason for low grade rubber is uncleanliness.

The coconut shell, cup and bucket should be washed well after emptying the latex. Then they should be kept inverted. If the bucket is unclean, due to the influence of bacteria there is a possibility of coagulation, and get spoiled the latex.

Because of the unclean vessels, there is a possibility of coagulation in the estate itself. To avoid such defects washing soda could be mixed. A tablespoon of washing soda be mixed to one bottle of water. From that mixture quarter or half bottle could be given to each tapper.

It is necessary to remove off the dampness that enters the smoke room and the moisture that is emitted by the sheet to mix with the farmer moisture out of the smoke room. This ventilators should be made at the bottom and top of the smoke room.

To absorb the moisture that gets off from the rubber sheets, bricks should be placed inside floor of the smoke room.

After kindling the fire the door of the smoke room should be closed.

By making 1 cm. diameter holes above the door the necessary air could be got to the furnace.

To confine the smoke to the room and to maintain the same temperature the metal sheets should be fixed about the ventilation to restrict the smoke getting out.

#### 4.3 • THE REASONS FOR LOW GRADE RUBBER SHEETS AND PRECAUTIONS

##### 4.3.1 - Dipt and Ash Practicles

Water is mixed to the latex to equal amount and acid is mixed, thereafter that bubbles must be removed off.

##### 4.3.2 - B u b b l e s

Water is mixed to the latex to equal amount and acid is mixed, thereafter that bubbles must be removed off.

.....

4.3.3 - Stain

With the aid of blunt equipment, the sheet is scratched, and if the mark of the scratch is left on the sheet, it is certain that the sheet has stain. This happens due to the action of bacteria.

As there is excess acid in the sheet, there is the action of bacteria. Therefore, to avoid such action, the sheet should be compressed and washed well. The moisture in the sheet or due to poor smoking the moisture can exist in the sheet to cause bacteria reactions.

4.3.4 - Fungal

Due to getting damp, keeping on the floor, non-storing in properly etc, cause to get the fungal into sheets. In such case by washing the tepole mixture and smoking again the fungal can be removed.

4.3.5 - Stickyness or Adhesiveness

The stickyness or the adhesiveness happens due to over heat in sunlight or due to over heat of the smoke room.

Greese

By adding proper amount of water to latex and washing if after compressing the greesy condition can be removed.

4.3.6 - The Coating of the Sheet

When coconut shells, coconut husks and raw woods are used as fuel such coating could be got. The superior quality of wood is rubber. When using husks it is essential that it should not exceed 1/10 of the wood amount used.

4.3.7 - Dots in the Sheets

When the drop of moisture underneath the smoke room falls on to the sheet with the soot this dot happens. If a ceiling is put on, this could be avoided.

#### 4.3.8 - The Mark of the Rafters

When the sheets are not regularly turned, and rafters are not washed this defect happens. On the first day twice, thereafter, once a day the hanging way of sheets should be changed.

If any one of the above defects found on rubber sheet, the sheet becomes low grade. Therefore, it is expected to provide a well equipped smoke room and proper instruments to avoid such defects.

#### 4.4. - EXTENSION ACTIVITIES

4.4.1 - To avoid the defects planting and production possessed by farmers, steps will be taken to instruct to them through the medium of instruction from Rubber Research Officers. Grading of rubber will be taught to the farmers also.

4.4.2 Other income generating plantations will be introduced to them beside rubber. During the baring period of 5 years as the rubber plants are not well grown the farmer can cultivate plantains among the rows of rubber plants. The extension services expected to introduce such situations, to the farmers.

4.4.3 They also influenced with animal husbandary.

4.4.4 Through the existing women committee of the society help to farmers to start the self-employment so that they are able to earn some income in future. As it is being done successfully at present it is expected to widening so far.

4.4.5 During the month of January and February which is a non-tapping period, the Farmers are forced to buy things for debts from private dealers and finally, they market their rubber sheets to the same traders who became prey to the tricks. To avoid such situation, it is expected to made way to the farmers to get loans for the current expenses, from co-operative rural banks.

4.4.6 The aid given to the farmers by the Government is quite insufficient ~~some~~ it is used for some personal purposes. Therefore, trees are neglected of manuring. Therefore it is expected to make a loan scheme for cover up the excess expenses on rubber cultivation.

4.4.7 A saving system will be suggested to encourage the farmers in enrich the plantation as well as ~~save their~~ money.

4.4.8 The inputs essential in rubber plantation such as, chemical goods and equipments (rubber dishes) are sold to farmers through the processing centre at a reasonable price.

## CHAPTER 5

### ORGANIZATION OF MANAGEMENT

#### 5.1 - Capacity of Existing Organisations

Among the Organizations in ~~this~~ area, it could be said that the co-operative is the only voluntary organisation. At present the two Co-operative societies render the several services to the villagers.

- I. Ruwanwella Multi Purpose Co-operative Society
- II. Imbulane Thrift and Credit Society

The Ruwanwella Multi- Purpose Co-operative Society run several branch sales points supply goods to the customers and also to buy the products from the Farmers.

As the farmers get loans earlier from the private dealers, the purchasing ~~done~~ by the predecessors (B.S.P.) are not successful. Through the proposed loans scheme, it is expected to ~~over come~~ this problem. Besides, fertilizer, chemicals, dishes etc. are sold by these centres and also through the Ruwanwella Rural Bank facilitated for savings and granting loans.

By the education section of Ruwanwella M.P.C.S. Ltd, the women ~~Committies~~ are formed and they are instructed with the importance of self employment and co-operative system.

Ruwanwella Co-operative Society ~~is~~ said to be a profitable society and also it was chosen twice repeatedly as the best in the Kegalle District in 1985, 1986 . As the Society also rich in management as well as economically it can carry out this sort of project without failing . These reasons also cause to grant the bank loan facilities without any reluctance.

Besides these, there is the Thrift and Credit Society which was formed about two years back. There are about 125 members. The maximum individual loan limit allowed Rs. 5000/-. At present this Society exhibits its progressive path, encouragement of savings and offering minor loans to the members according to their needs. This is administered by the committee formed of the members. Eventhough, this Society does not have the capacity in economy and management to carry out such a vast Project.

## 5.2 - Proposed Organisation and Management

There is not a new Co-operative Organisation will be formed to carry out this Project. It is expected to carry out this Project through the Ruwanwella Multi Purpose Co-operative Society. out of the hundred representatives of the general body, seven are <sup>as the</sup> selected/Board of Directors. While the Director Board make decisions, the General Manager and the Staff implement them. In this Project, the same management system will be adopted. Apart from this, the steering Committee proposed to form in relation to proper management of centre, comprising selected members of two pradesikas called Imbulane and Syabalawala and the selected small holders.

One of a Board member will be included to the abovementioned steering Committee in relation to have a good relationship between the Director Board and the steering Committee. Through this Steering Committee the activities of the centre can be discussed and it could be avoided the failures.

The linkage between the two advisory Board can pave way fundtion fruitfully. ( Organisation chart is ~~in~~ <sup>an</sup> annexure 5)



5.3

Management

The Credit manager who is the Officer -in-charge to carry out this Project works under the guidance of the General Manager of the said Society. The control and supervision of the centre done by him directly. The Credit Manager beside offering the money which is necessary to buy the raw materials and also to supply the other necessities. He should be supervised often and provide Reports to the General Manager and discuss with the Board of Directors.

A Manager is appointed to the processing centre; who should supply the raw materials in consultation with Farmers and arrange a suitable system for it. He will also give instructions to the workers regarding manufacture and he is responsible for the management of the centre too. This Manager is expected to get all practical knowledge from the Rubber Research Institute of Sri Lanka. He is expected to prepare reports on production and expenditure etc.

His Accounts will be audited by the Accounts Branch with the supervision of the Accountant of the Society. The monthly profit and loss account is prepared by the Accounts Branch and is produced to the director Board for discussion.

A labourer is provided to the manager to help him regarding buying Latex, to coagulate to clean the dishes and other equipment, to roll the sheet and to smoke them etc. and also he has to do other tasks ordered by the Manager.

The active assistance of the Manager should be given to the Officials of the education section in regard to implement the extension services around the project area. Planning and implementation of this type of programmes will be his duties.

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CHAPTER 6

Financial Analysis

A. Project Cost

It is estimated that the cost of smoked rubber processing centre operations will be as follows:

i. Building with water service	-	150000 (annexure 3A)
ii. Processing Equipments	-	33900 (Exhibit -1)
iii. Furniture & Equipments	-	16100 (Exhibit -1)
		<hr/>
		200000
iv. Working capital		50000
		<hr/>
		<u>250000</u>

B. Source of Financing

This project shall be financed by the Peoples' Bank under small and Medium Scale Industries loan scheme. (S.M.I. loan scheme). The recoveries period will be 5 years and interest rate 14%, which is low compare to the interest rates of other loan schemes. The Bank will consider the processing centre and the equipment itself as securities.

C. Profitability

It is expected that the project will generate a net income of Rs. 80590. in very first year and onwards, with an estimated return on investment of ~~42.8~~ % (see exhibit .2...) 40.3%.

Contd...

D(1) Ratios of Account

(1) Profitability	1 Yr.	2 Yr.	3 Yr.	4 Yr.	5 Yr.
i. Annual net profit (exhibit 4 )	57590	64190	68790	74390	79990
ii. Monthly net profit (exhibit 4 )	4799	5349	5740	6199	6665
iii. Net Excess(annual) ( chapter 7)	30090	35690	412901	46890	52490
iv. Net Excess(monthly) (chapter 7)	2507	2974	3440	3907	4374
v. Return on Investment	40.3% (EXHIBIT 2)				
vi. Net present value	4649429. (EXHIBITS)				
vii. Internal rate of return	More than 30%.				

(11) Sensitive Analysis

It is assumed that the production cost will increase in 1% in each year.

	1 Yr.	2 Yr.	3 Yr.	4 Yr.	5 Yr.
i. Net profit(Annual) (exhibit 6)	(151910)	98090	98090	98090	98090
ii. Net profit (Monthly)	(12659)	8174	8174	8174	8174
iii. Net present value	(151910)	66550	43826	28429	19603
iv. Internal rate of return	More than 30%.				

E. Loan / Capital Ratio

<u>Loan</u>	=	<u>200000</u>	=	4:1
Contribution of the investor		50000		
Loan capital Ratio	=	<u>4:1</u>		

Contd....

F. Capital / Labour Ratio

In each and every year, the cader will be confined only 3.

$$\frac{\text{Capital Investment}}{\text{Number of labour}} = \frac{200000}{3} = 66666\text{-}$$

Capital of supply job oppotunity  
for one labour = Rs.66666

G. Labour / Production Ratio

$$\frac{\text{Value of the production}}{\text{Number of labour}} = \frac{1212500}{3}$$

The value of the production  
per one labour = 4,04,166

It is assumed this amount will not be changed, because of the planning to get the maximum production capacity.

H. Gross Profit / Capital Investment Ratio

$$\frac{\text{Gross profit} \times 100}{\text{Capital Investment}} = \frac{70090 \times 100}{250000}$$

$$= 28\%$$

CHAPTER 7

Budget of the Project

The budget or the cash flow of the project is given below. According to the cash flow there is an excess in every year which is calculated.

The budget is as follows

Contd...

<u>Receiving</u>	<u>1 Yr.</u>	<u>2 Yr.</u>	<u>3 Yr.</u>	<u>4 Yr.</u>	<u>5 Yr.</u>
1. Capital of the society	50,000	-	-	-	-
11. S.M.I. Loan	200,000	-	-	-	-
111. Excess before deducting of Bank Interest & depreciation	98,090	98090	98090	98090	98090
Total receiving	348090	98090	98090	98090	98090
<u>Less</u>					
Capital investment	250000	-	-	-	-
	98090	98090	98090	98090	98090
Bank Interest	28000	22400	16800	11200	5600
Gross profit	70090	75690	81290	86890	02490
Loan instalment	40000	40000	40000	40000	40000
Net Excess(annual)	30090	35690	41290	46890	52490
Nex Excess (Monthly)	2507	2974	3440	3907	4374

### CHAPTER 8

#### Conclusions & Recommendations

##### 8.1 Conclusions

It is revealed that the farmers in project area live in hard and difficult conditions due to the low income. Though the main income generating plant is being the rubber because of its production fallen into low grade at present, the farmers are unable to get the exact income from it. Thus the need for upgrading the quality of the smoked rubber sheets is becoming very important. There is high potential for further development of the production as well as the rubber plantation. The improvement of this production would increase not only the farmers income, but also the national income. It creating some job opportunities to the unemployed youths.

Contd....

Though there are two rubber productions called crape rubber and smoked rubber; It is more appropriate sheets produce of smoked rubber in this area.

## 8.2 Recommendation

To over come the problem faced by the farmers following suggestion could be made.

- (1) In relation to upgrade smoked rubber sheets, a fully equiped rubber processing centre should be formed in the area. Organization should be a presently active one; if not it is diffucult to operate the project well. The project size is not suffiecient to form a separate agricultural society for this purpose. As the Ruwanwella M.P.C.S. is engaging, agricultural activities in intergratively already, this proposed project andthey could be operated it well. The strenghts of Ruwanwella M.P.C.S. has, will help to facilitate in various ways of intergration process.


- |                         |  |
|-------------------------|--|
| Forward Intergration    | - Processing & Marketing of rubber sheets andother crops   |
| Back ward Intergration  | - Supplying of inputs such as manure, chemicals since the inception of rubber plantation.<br>- Supply of loan facilities           |
| HorizontaI Intergration | - Cordinate the various organization engage in development activities and rubber plantation and make use of them in proper manner. |

Contd....

# LOCATION OF 3 VILLAGES IN PROJECT AREA

MAP: I



PROJECT AREA 

- 1. NIWUNHELLA
- 2. SIYAMBALAWALA
- 3. IMBULANA

## Annexure. I

The Land utilization Patten of the Project areaName of the village/Acreage.

<u>Crop.</u>	<u>Imbulana</u>	<u>Siyambalawala</u>	<u>Niwunhella</u>	<u>Total.</u>
Paddy.	28.2	32.3	69.0	127.5.
Rubber.	68.0	90.0	327.0	485.0.
Coconut	30.0	40.0	135.0	205.0
Mixed crops.	29.0	31.0	57.0	117.0.
Crown lands.	0.3	2.0	0.1	3.0.
Resevation.	—	—	28.0	28.0.
<u>Total</u>	<u>155.5.</u>	<u>195.3</u>	<u>616.1</u>	<u>968.1.</u>

No. of House holds and Populationin the Project area.Name of the village.

<u>Item.</u>	<u>Imbulang.</u> NO	<u>Siyambalawala</u> NO	<u>Niwunhella</u> NO	<u>Total.</u>
House holds.	28	327	234	589.
Population	120	1022	1308	2450.
Families.	30	327	235.	592.



The way of Increasing the Farmers Income

(1) Current Situation

Present yield per one acre(perday) 5.5 litres (Approximately)

\* The dry rubber quantity of yield per acre (perday) 2.00 kgs.

The dry rubber quantity of monthly yield (for 20 days) 2.00 x 20  
40 kgs.

The dry rubber quantity of annual yield (for 10 months) 40 x 10  
400 kgs.

The farmer income for 400 kgs of dry rubber 400 x 14.50 \*\*  
= Rs. 5800/=

The tapping cost (Rs. 4/50 per 1 kg of talex) *Actual labour charge* = 4.50 x 600  
Rs. 2700

The Net Income (Annually) Rs. 5800 - 2700  
Rs. 3100

The Net Income (monthly) Rs. 310  
=====

\* The metrolea reading of talex in this area is ranges between 140-150 according to that the dry rubber quantity is calculate.

\* The current price which the farments receive for dry rubber 1 kg.

This is detemined according to the average price for smoke rubber sheet and the production cost.

Average price for	- Production	
one kg. of smoked rubber	cost	
16.00	- 1.50	= 14.50

Proposed way to Increase the income of the farmers

- By Introducing better cultivation practises the it will be expected to increase the yield per acre upto 4 kgs (7.2 litres) of latex.

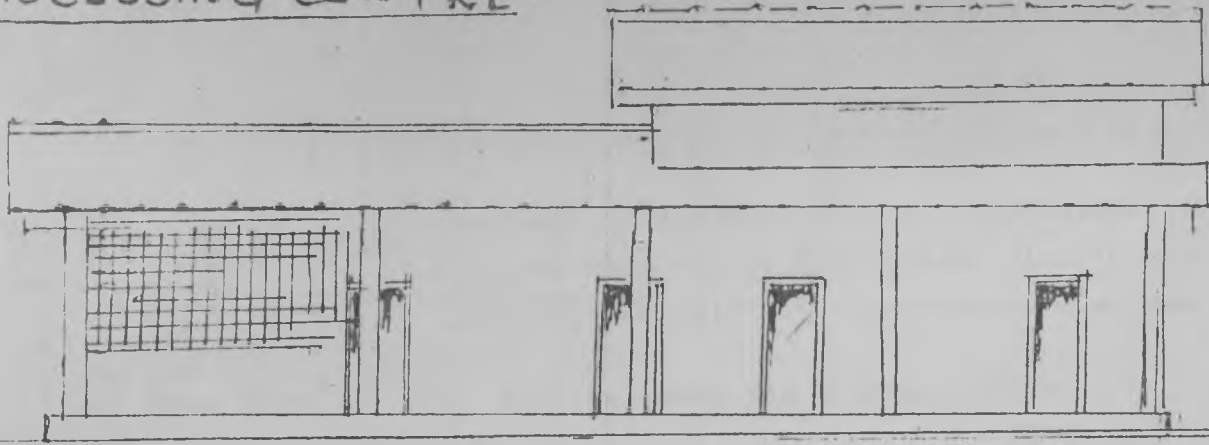
Dry rubber quantity per acre (per day	=	2.64 kgs.
Dry rubber quantity per acre (per month)	=	2.64 x 20
	=	52.80 kgs.
The monthly income	=	52.80 x 15.50
	=	Rs. 818.40
The income (Annually)	=	Rs. 8184.00
Less Tapping cost	=	4.50 x 800
	=	Rs. 3600.00
The net income (annually)	=	8184 - 3600 = 4584
	=	Rs. 458.40
The net income (monthly)	=	=====

The society expected to pay back the considerable amount of profit after all expenses. The farmer will paid-/15 cts. per one kg. in first financial year and -/20 cts. per one kg. in second year, and contineously it will be paid to them according to the profit,

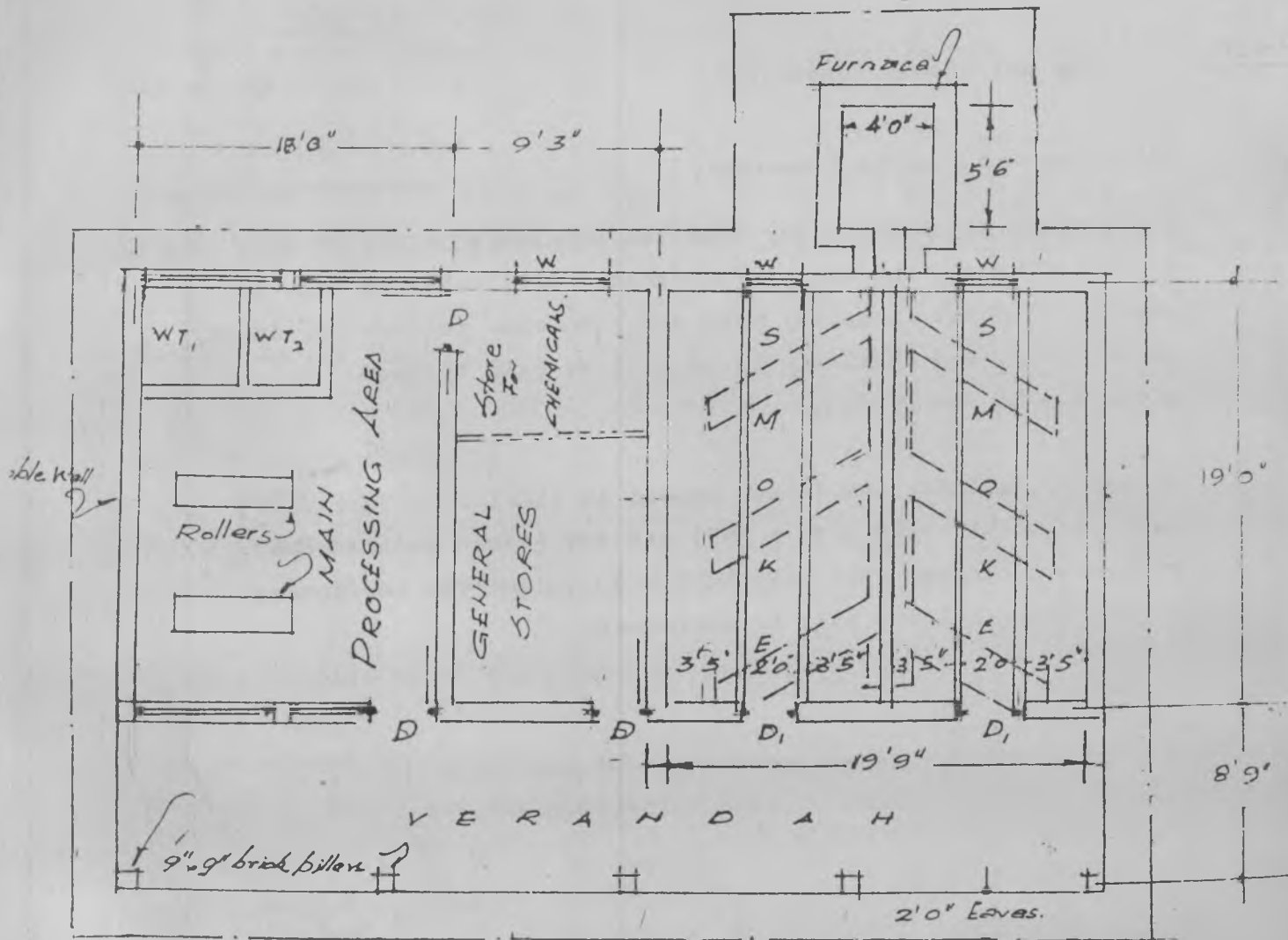
According to this, the farmer income in first year will be Rs. 4666.05 ( 4584 + 15 x 547) and the second year income will be increased upto 4693.40 ( 4584 + 20x547) the income of the small holders will be increased.

PROCESSING CENTRE.

28

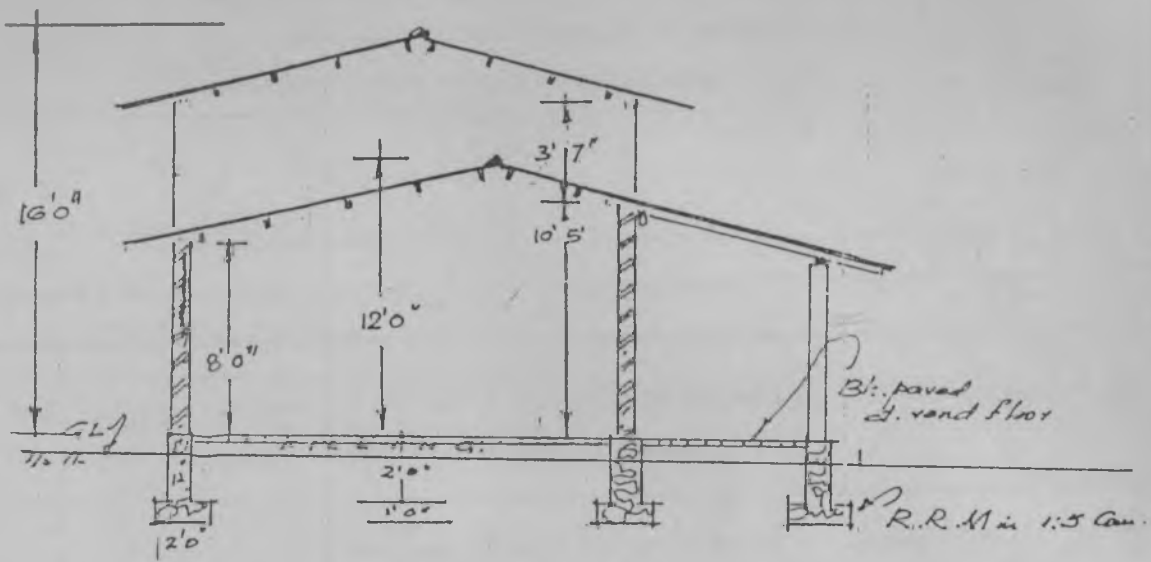


FRONT



PLAN

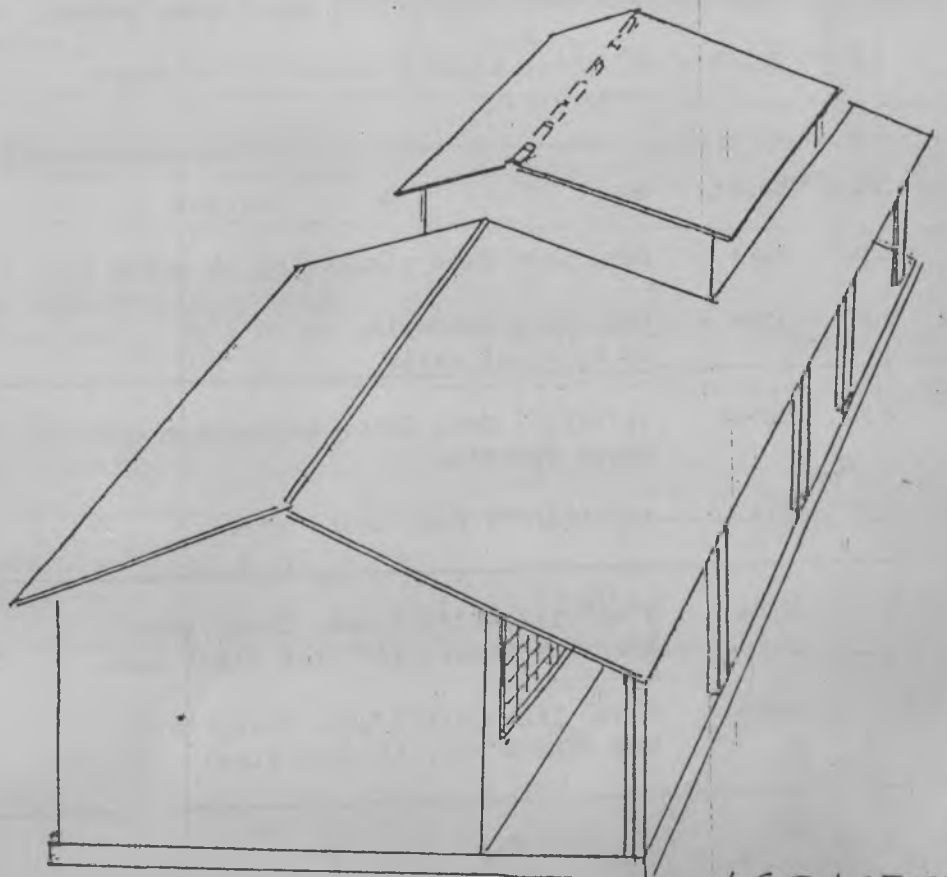
Scale



SECTION AA

DISCRIPTION OF DOORS & WINDOWS

✓	3'0" x 6'0"	LEGED BRACED & BATTENED	3 Nos
✓	2'6" x 7'0"	Do Do	2 Nos
✓	2'0" x 1'6"	Do Do	4 Nos



1601573

Estimate of Expenditure for Construction of RUBBER  
PROCESSING CENTRE at Sirambalawala.

Annexure 3A

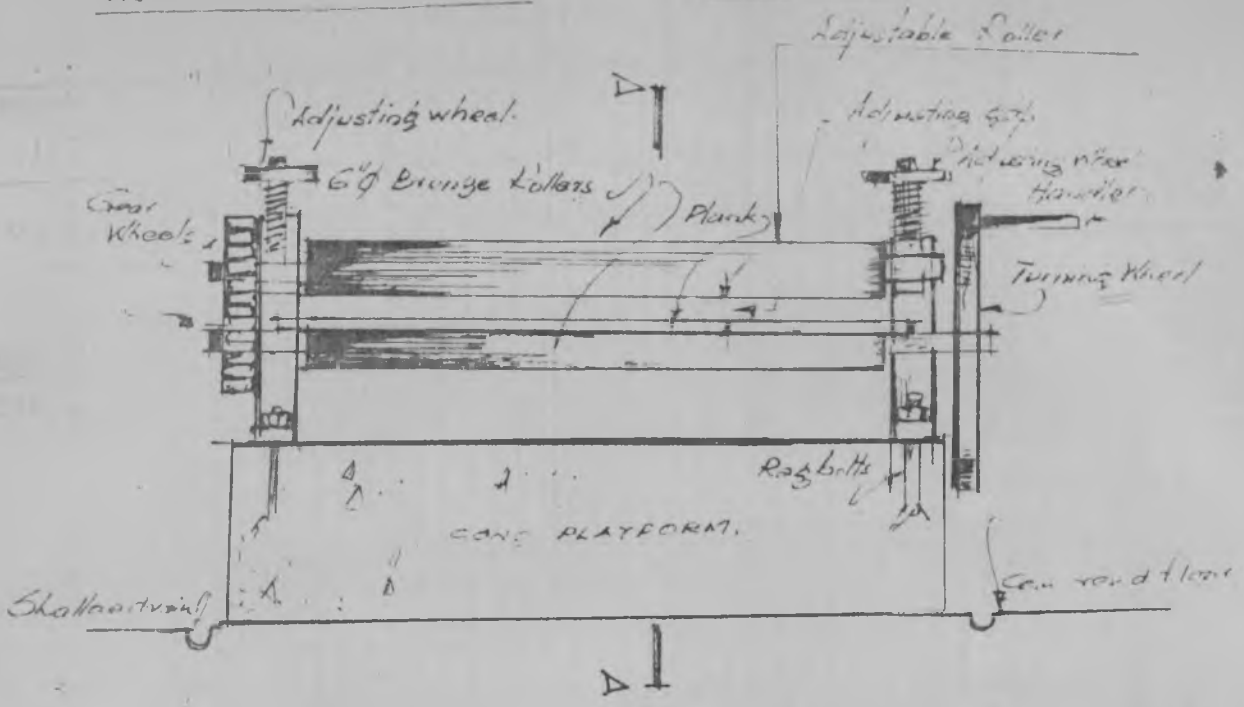
Item	Qty	Unit	Description	Rate	Amount	
					Rs.	cts.
1	Item		Preparing site as directed including levelling and removal of trees etc.	Sum	1000	00
2	7.00	Cubes	Excavation of Foundation and backfill.	75/=	525	00
3	8.00	Cubes	R.R. Masonary in 1:6 Cem. Mortar	2065/=	16520	00
4	2.50	Sqrs	3/4" thick 1:2 cement sand D.P.C. with 2 coats tar and blinded with sand.	340/=	850	00
5	13.50	Cubes	9" thick brike walls in 1:6 Cem. mortar.	2100/=	28350	00
6	38	L/ft	9"x9" brik columns in 1:5 cem. motors.	12/50	475	00
7	05	Nos	9"x9"x6" 1:2:4(3/4") Cem. conc. pads.	40/=	200	00
8	80	Sq.ft	1" thick class I timber L & B doors complete.	70/=	5600	00
9	20	Sq.ft	do - do - window	60/=	1200	00
0	20.00	Sqrs	Cem. Lime Sand plastering to walls.	300/=	6000	00
1	4.50	Sqrs	Cem. Sand rendering up to 3'0" on internal walls	350/=	1575	00
2	3.50	Cubes	1:3:6(1") Cem. Conc. smokeplace and smoke tunnels.	2200/=	7700	00
3	4.00	Nos.	1:2:4(3/4") Cem. Conc. vents.	50/=	200	00
4	34	L/ft	9"x6" 1:2:4(3/4") Cem. Conc. lintels R/F with 2 nos. 3/8" Tor steel rods.	20/=	680	00
5	05	-do-	9"x9" 1:2:4(3/4") Cem. Conc lintels R/F with 4 Nos. 1/2 Tor Steel ds.	40/=	200	00

Qty.	Unit.	Description	Rate	Amount	
				Rs.	Cts.
4.00	Sqrs	1/2" 1:2 Cem. rendering to plinth	350/=	1400	00
15.00	Cubes	Dry earth filling in floors.	80/=	1200	00
4.00	Sqr	1:2 3/4" thick Cem. rendering to Furnace and tunnels	350/=	1400	00
0.50	Cub.	1:2:4(3/4") Cem. Conc. cappings on tunnel flanks.	3500/=	1750	00
175	Sq.ft.	3" thick 1:2:4(3/4") Cem. Conc. slabs R/F with 1/4" m.s. rods at 4" C/C bothways	28/=	4900	00
0.70	Sqrs.	4 1/2" thick brick walls in 1:5 Cem. mortar to tanks.	780/=	546	00
8.00	Sqrs	3" brick paved cem. rendered floors, including skirting	1000/=	8000	00
180	Sq.ft	2"x2" welded mesh supplied and fixed on 3"x5" wooden frames.	21/=	3780	00
20.00	Sqrs.	Sawn timber rppf wprl 3"x5" wall-plates, 2"x4" rafters, 2"x2" reapers, covered with Gauge 28 Corr, G.I. sheets.	1400/=	28000	00
4.00	Sqrs.	Juteheisin ceiling fixed to wooden framework to smokeroom.	650/=	2600	00
3.60	Sqrs.	Gauge 28 G.I. sheet ceiling with class II timber framework for processing room.	940/=	3384	00
60	L/ft.	Asbestos ridging supplied and fixed in position.	15/=	900	00
70	L/ft.	6" semicircular brick draing built complete.	15/=	1050	00
				1,29,985	00

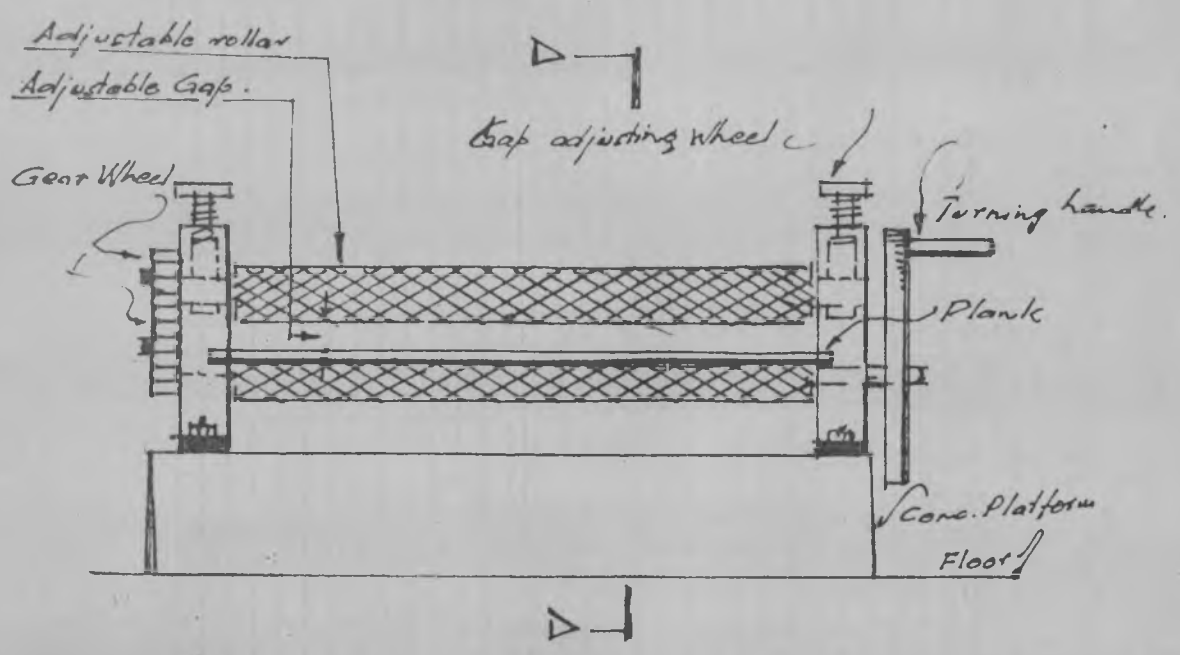
Qty.	Unit	Description	Rate	Amount	
				Rs.	cts.
				1,29,985	00
Item	<u>WATER SUPPLY</u> Allow	Supplying and installing 1" aster pipe P.V.C. pipes, specials, and O'head tank complete.	Sum	20,000	00
				1,49,985	00

Say Appoximately  
1,50,000/=

RUBBER ROLLERS. - Annexure 4.



FRONT ELEVATION  
OF SQUEEZING ROLLER.



FRONT ELEVATION  
OF DIAMOND ROLLER

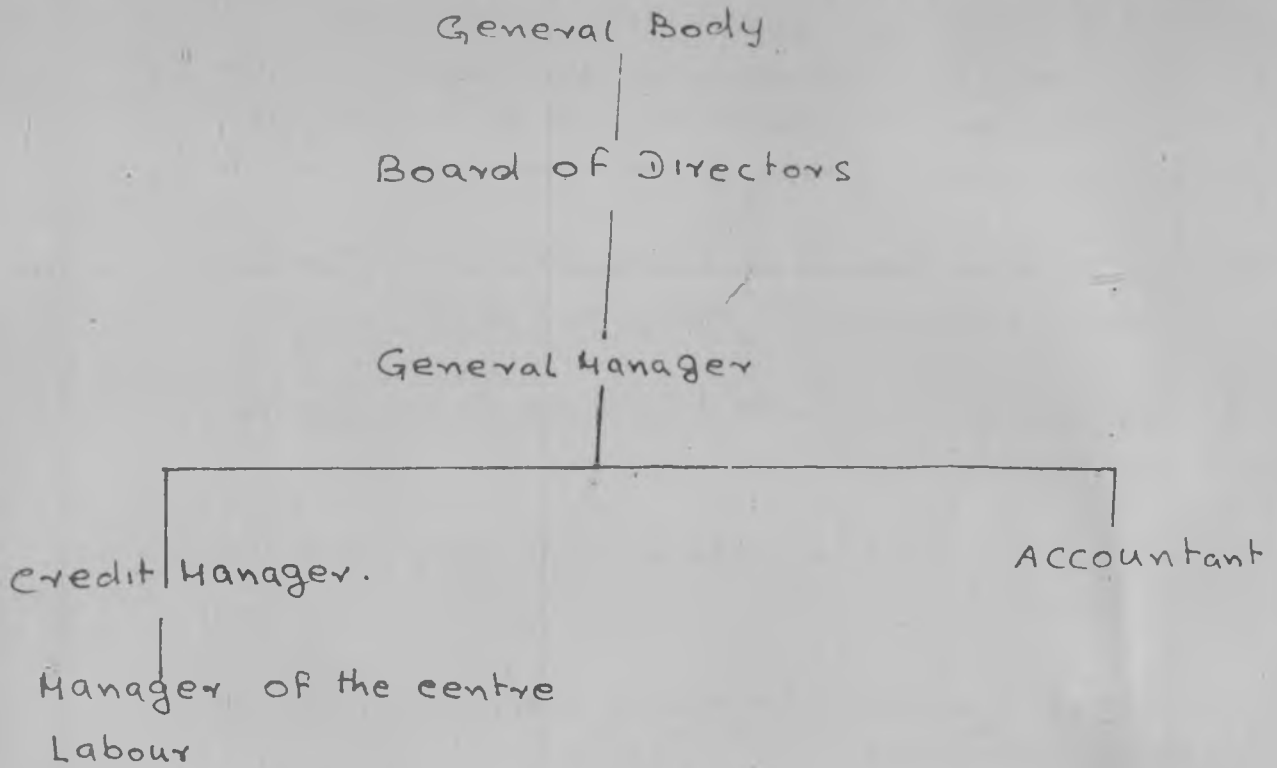


# Metholac Ready - Reckoner

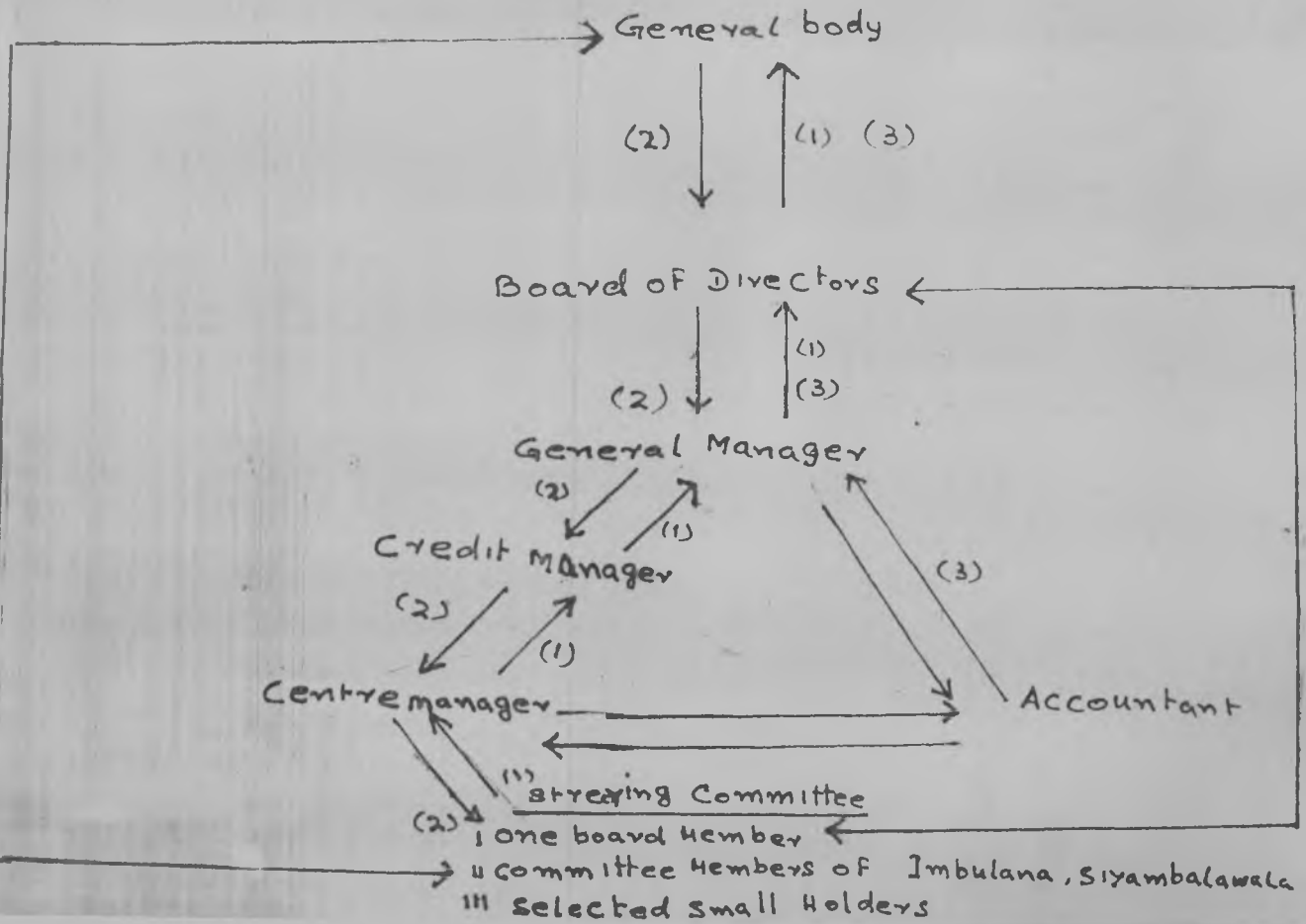
Annexure 4

METRIC READY-RECKONER  
 ( Dilution 1 part of latex to 2 parts of water )  
 The dry weights are given in kilos and the volume in litres

LITRES 200	READINGS										150 & above
	50	60	70	80	90	100	110	120	130	140	
1	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.34	0.36	0.38	0.40
2	0.40	0.44	0.48	0.52	0.56	0.60	0.64	0.68	0.72	0.76	0.80
3	0.60	0.66	0.72	0.78	0.84	0.90	0.96	1.02	1.08	1.14	1.20
4	0.80	0.88	0.96	1.04	1.12	1.20	1.28	1.36	1.44	1.52	1.60
5	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00
6	1.20	1.32	1.44	1.56	1.68	1.80	1.92	2.04	2.16	2.28	2.40
7	1.40	1.54	1.68	1.82	1.96	2.10	2.24	2.38	2.52	2.66	2.80
8	1.60	1.76	1.92	2.08	2.24	2.40	2.56	2.72	2.88	3.04	3.20
9	1.80	1.98	2.16	2.34	2.52	2.70	2.88	3.06	3.24	3.42	3.60
10	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00
11	2.20	2.42	2.64	2.86	3.08	3.30	3.52	3.74	3.96	4.18	4.40
12	2.40	2.64	2.88	3.12	3.36	3.60	3.84	4.08	4.32	4.56	4.80
13	2.60	2.86	3.12	3.38	3.64	3.90	4.16	4.42	4.68	4.96	5.20
14	2.80	3.08	3.36	3.64	3.92	4.20	4.48	4.76	5.04	5.32	5.60
15	3.00	3.30	3.60	3.90	4.20	4.50	4.80	5.10	5.40	5.70	6.00
16	3.20	3.52	3.84	4.16	4.48	4.80	5.12	5.44	5.76	6.08	6.40
17	3.40	3.74	4.08	4.42	4.76	5.10	5.44	5.78	6.12	6.46	6.80
18	3.60	3.96	4.32	4.68	5.04	5.40	5.76	6.12	6.48	6.84	7.20
19	3.80	4.18	4.56	4.94	5.32	5.70	6.08	6.46	6.84	7.22	7.60
20	4.00	4.40	4.80	5.20	5.60	6.00	6.40	6.80	7.20	7.60	8.00
21	4.20	4.62	5.04	5.46	5.88	6.30	6.72	7.14	7.56	7.98	8.40
22	4.40	4.84	5.28	5.72	6.16	6.60	7.04	7.48	7.92	8.36	8.80
23	4.60	5.06	5.52	5.98	6.44	6.90	7.36	7.82	8.28	8.72	9.16
24	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16	8.64	9.12	9.60
25	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00
26	5.20	5.72	6.24	6.76	7.28	7.80	8.32	8.84	9.36	9.88	10.40
27	5.40	5.94	6.48	7.02	7.56	8.10	8.64	9.18	9.72	10.26	10.80
28	5.60	6.16	6.72	7.28	7.84	8.40	8.96	9.52	10.08	10.64	11.20
29	5.80	6.38	6.96	7.54	8.12	8.70	9.28	9.86	10.44	11.02	11.60
30	6.00	6.60	7.20	7.80	8.40	9.00	9.60	10.20	10.80	11.40	12.00
31	6.20	6.82	7.44	8.06	8.68	9.30	9.92	10.54	11.16	11.78	12.40
32	6.40	7.04	7.68	8.32	8.96	9.60	10.24	10.88	11.52	12.16	12.80



Administrative and Co-ordination Process



1. The proposals and discussions on the centre, make by the steering committee comes to the board of directors and when it necessary to pass to General Body it send to it.
2. The decisions taken by the General Body or other authority which is relevant to the centre pass through this channel.
3. The accounts of the centre present through this way and take the necessary action.
4. Relationship between the General Body and the steering committee.
5. Relation ship between the Board of Directors and the Steering Committee.

Estimated Total Cost of the Project

1. Capital Investment		2,50,000
(A) Building (annexure . . . A. .)		1,50,000
(B) Processing Equipment		33,900
(i) Smooth Roller	8,000	
(ii) Diomand Roller	9,000	
(iii) Aluminium Sheets 600	15,000	
(iv) Metroloc 1	550	
(v) Latex Measuring set 1	650	
(vi) Monel Mesh Gauge 40	50	
(vii) Monel Mesh Gauge 60	50	
(viii) Aluminium buckets 06	600	
(C) Furniture & Equipment		16,100
(i) Writing table 01	1,500	
(ii) Table with Galvanized sheets 02	200	
(iii) Office Chairs 02	200	
(iv) No.3 Scale 01	14,200	
Total Cost of Investment		<u>2,00,000</u>
(d) Working Capital (annexure)		<u>50,000</u>
2. Operating Expenses		11,27,410
(A) Fixed Cost		17,500
(1) Depreciation	12,500	
(i) Building	7,500	
(ii) Processing equipment	3,390	
(iii) Furniture	1,610	
(2) Repaire & Maintanance	5,000	
(i) Repaires	500	
(ii) Insuarance	1,400	
(iii) Licences	500	
(iv) Electricity	500	
(v) Transport	1,000	

(B) Variable Cost		11,00,910
(1) Salaries/Wages		28,290
(i) Manager	9,600	
(ii) Skilled labour	8,400	
(iii) Unskilled labour	6,600	
(iv) E.P.F. (Employee proudent fund)	3,690	
(2) Raw Materials		10,81,620
(i) Latex (dry rubber kgs 69000x15.50)	10,69,500	
(ii) Fire woods 35 yrs	3,500	
(iii) Formic Acid 425 bottles	8,500	
(iv) Sodium 8 kgs	120	

Assumptions in Calculation

- (A) - (1) Depreciation - I,II,III      -      The building depreciate in to 20 yrs and the life time of frocessing equipment and Furniture is considered as ten yrs.
  
- (A) - (2) - V Transport      -      As the rubber union set up a store to purchasing rubber sheets very near to the society, which is far about 10 miles, it is estimated that less amount has to spend.
  
- (B) - (2) -(1) Latex      -      It is estimated the price which should be given to the dry rubber quantity in latex which the centre expected to buy. This dry rubber amount will be the weight of the production of the centre. The normal expected days of rubbre producing is 20 per month.

But most of the farmers used to tapped daily, so that and the acreage, tapping system etc. in to consideration the working days estimated as 23 days, per month. Only 10 months took in to account as the working period, as there is 2 months period of non tapping days months production per day Kgs.

$$23 \times 10 \times 300 = 69000 \text{ Kgs}$$

$$69000 \times 15.50 = 1069500$$

**EXHIBIT 2**  
**INCOME STATEMENT**  
**(First Year)**

Gross Income (1) (total production x price)			
69000 Kgs x 17.50	=	1212500	1207500
(11) Emptres. 10 x 50	=	500	500
Less : Expenses .....	=	1127410	
(1) Fixed cost - 17500			
(11) Variable cost -1109910			
Net Profit .....		<u>85590</u>	80590.

(1) Return on investment =  $\frac{\text{Net profit} \times 100}{\text{Total cost in investment}} = \frac{80590 \times 100}{200000} = 40.3\%$   
R.O.I

(11) Pay back period =  $\frac{\text{Total cost in investment}}{\text{Net profit}} = \frac{200000}{80590} = 2.4 \text{ yrs.}$

EXHIBIT - 3

MARGINAL INCOME STATEMENT

Gross income	1212500	-	100%
Variable Cost	<u>1109910</u>	-	91%
Marginal contribution	103090	-	9%
Fixed cost	17500	-	1.5%
Net income	85590	-	7.5%

(1) Break - Even point =  $\frac{\text{Fixed cost}}{\text{Marginal contribution of unit}}$

=  $\frac{17500}{0.09 \times 17.50}$

= 11,111

(2) Margin of safety =  $\frac{\text{Actual production} - \text{Break even production}}{\text{Actual production}}$  =  $\frac{69000 - 11111}{69000}$

= 57889

=  $\frac{57889 \times 35 \times 100}{1212500 \times 2}$

= 83.5%

Contd....

EXHIBIT 4.

Profitability Analysis.

Income	1yrs	2yrs	3yrs	4yrs	5yrs
(1) Production Income	12,12,500	12,12,500	12,12,500	12,12,500	12,12,500
(2) Other Income					
(i) Selling of Acid Jar	500	500	500	500	500
(ii) Salvage value	-	-	-	-	-
	12,13,000	12,13,000	12,13,000	12,13,000	12,13,000
<u>Less</u>					
Production Cost	11,09,910	11,09,910	11,09,910	11,09,910	11,09,910
Administrative Cost	5,000	5,000	5,000	5,000	5,000
	98,090	98,090	98,090	98,090	98,090
	28,000	22,400	16,800	11,200	5,600
Less :- Bank Interest					
Gross profit	70,090	75,690	81,290	86,890	92,490
Less Depreciation	12,590	12,500	12,500	12,500	12,500
Net Profit (annual)	57,590	64,190	68,790	74,390	79,990
Net Profit (monthly)	4,799	5,349	5,740	6,199	6,665



Exhibit 5

Under assumption of increasing of Production Cost by 1% annually the Sensitive analysis.

Profit/Cost ratio

Year	Costan Capital investment	Ad MKT and Ins-Cost	Production Cost	Total Cost	Discounting factor	Net Present value of total	Total benefit of the Prd.	Net pre value of total pr.
1	250000	5000	1109910	1364910	1	1364910	1213000	1213000
2	—	5000	1121009	1126009	.869	978501	1213000	1054097
3	—	5000	1132219	1137219	.756	859737	1213000	917028
4	—	5000	1143541	1148541	.637	754591	1213000	772681
5	—	5000	1356976	1361976	.571	777688	1213000	692623
	250000	25000	5863655	6138655		3535427	6065000	4649429

Profit/Cost Ratio =  $\frac{\text{Net Present Value of total Production}}{\text{Net Present Value of total Cost}} = \frac{4649429}{3535427}$

1.31

Net Present Value of the Project and Internal Rate of Return.

Exhibit 6

Project Cost

Fixed Cost	Other	Production Cost	Total Cost	Total Benefit	Net Benefit	Discounting Factor 15%	N.P.V. of Ben. Net	Discounting factor 30%	N.P.V. of Net Benefit
250000	5000	1109910	1364910	1213000	(151910)	1	(151910)	1	(151910)
—	5000	1109910	1114910	1213000	98090	.869	85240	.769	65550
—	5000	1109910	1114910	1213000	98090	.756	74156	.591	43826
—	5000	1109910	1114910	1213000	98090	.637	62483	.455	28429
—	5000	1109910	1114910	1213000	98090	.571	56009	.350	19603
250000	25000	5549550	5824550	6065000	240450	—	125978	—	5498

(1) Net Present Value of net benefit is Rs. 125978

(11) The Internal Rate of Return of this Project is little more than 30%.

Additional Plantain and Availability of Lett  
 13 years will be as under.

43-D

No.	Year	Existing addition	Total acreage	Total no of Plant	Production Per day	Total Production Per year	Average	Plant	Members - 125	Production Per day kg.	Dry Rubber ke	Production Per year Ton
1	1985 - 86	485	485	77600	582	183	250	40000	750	800	800	69
2	1986 - 87	485	525	84000	630	145	290	46400	750	800	800	69
3	1987 - 88	525	540	86400	648	149	305	48800	750	800	800	69
4	1988 - 89	540	565	88800	666	153	320	51200	750	800	800	69
5	1989 - 90	555	565	90400	678	156	330	52800	750	800	800	69
6	1990 - 91	565	565	90400	678	156	330	52800	750	800	800	69
7	1991 - 92	565	565	90400	678	156	330	52800	750	800	800	69
8	1992 - 93	565	565	90400	678	156	330	52800	750	800	800	84
9	1993 - 94	565	565	90400	678	156	330	52800	750	800	800	89
10	1994 - 95	565	565	90400	678	156	330	52800	750	412	412	95
11	1995 - 96	565	565	90400	678	156	330	52800	750	428	428	98
12	1996 - 97	565	565	90400	678	156	330	52800	750	428	428	98
13	1997 - 98	565	565	90400	678	156	330	52800	750	428	428	98





PROFITABILITY ANALYSIS

	1st Year	2nd year	3rd year	4th year	5th year
Income	1,207,500	1,207,500	1,207,500	1,207,500	1,207,500
1. Production Income	1,207,500	1,207,500	1,207,500	1,207,500	1,207,500
2. Other income	500	500	500	500	500
Selling of acids etc.	500	500	500	500	500
Total	1,208,000	1,208,000	1,208,000	1,208,000	1,208,000
LESS:					
Production cost	1,109,910	1,109,910	1,109,910	1,109,910	1,109,910
Administrative cost	5,000	5,000	5,000	5,000	5,000
	<u>93,090</u>	<u>93,090</u>	<u>93,090</u>	<u>93,090</u>	<u>93,090</u>
LESS:					
Bank interest	28,000	22,400	16,800	11,200	5,600
Gross Profit	65,090	70,690	76,290	81,890	87,490
Less depreciation	12,500	12,500	12,500	12,500	12,500
Net profit annual	52,590	58,190	63,790	69,390	74,990
NET PROFIT - Monthly	4,382	4,849	5,315	5,782	6,249



The question comments made by Prof. V.R. Gaikwad

If the quality of milling by ACFK is not satisfactory and not timely then NAC will suffer. The previous record of ACFK in Rice Milling is not satisfactory. As such, the possibility of NAC having its own rice mill need to be examined. As it is ACFK has no sufficient capacity to mill the volume of paddy produced in NAC command area.

ACFK can process 14 tons per day and total process about 3.780 (270×14) tons per year (one shift) and 3 shift about 11,340 tons per year. At present ACFK have not sufficient paddy for process with break even point (about 7,000 tons per year). Government policy don't need primary Agricultural Cooperative has rice mill. NAC can not linkage with ACFK and ACFT for rice marketing. Because of ACFT is money problem and ACFK can not sell rice in the market.



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FIRST

ICA TRAINING COURSE FOR STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA

NEW DELHI / BANGKOK / TOKYO / SEOUL

1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

Project Title: Project on Nong Wai Agricultural  
Cooperative Ltd.

Country: Thailand.

Prepared by: Mr Kriengsak Sirihutakit

Funded by the Government of Japan  
and

Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.





- LEGENDS**
- IRRIGATION CANAL
  - HIGHWAY
  - ROAD
  - FIELD
  - HAMLET
  - RIVER
  - VILLAGE
  - HAMLET BOUNDARY
  - TAMBOL BOUNDARY
  - PROVINCE CHANGSAT
  - SUB-AREA BOUNDARY
  - ZONE BOUNDARY
  - AREA BOUNDARY
  - GATE TENDER'S OFFICE
  - WATER MASTER'S OFFICE
  - NAM PHONG SYSTEM OFFICE
  - TONE NUMBER



Management of Paddy and Rice Business  
Nong Wai Agricultural Cooperative

Summary

The Rice is the most important crop of Thailand Rice is also the most important export earner of Thailand. The paddy can planted both wet and dry season.

Recently the price of paddy decreased a low level. Therefore the government promotes Thais farmers switch to other crops. However, it has been very hard to convince the rice-growing farmers, because they still need to grow rice for home consumption.

Khon Kaen province is one of province of northeast of Thailand.

Nong Wai Agricultural Cooperative Ltd. (NAC) stay in the Nong Wai Pioneer Agricultural Project, cover the area of 68,860.21 rai. The total number of farm households in project area is 5,594.

Problems faced by farmers

1. The low prices of paddy.
2. Farmers do not use some modern inputs.
3. The income from rice production is low.
4. Farmers still depend on the loan given by merchants which has the high interest rate.
5. Farmers do not have enough storage capacity for paddy.
6. The reducing prices as the result of high moisture content are too much.
7. The truck owners take advantage over farmers by transporting paddy to sell to the middlemen who give the high commission.
8. Farmers could not sell the dry-season paddy to cooperative.

## Need and Justification for the project

1. To organize the complete cycle of the marketing by collecting paddy and have it milled at the rice mill. The rice is sold by NAC. By-products such as bran and broken rice are sold to member farmers who raise pigs, duck etc. The cooperative will also collect the pigs and eggs of the members and sell them to the pig cooperative and other dealers.
2. To render the transportation service to member's home for both farm inputs and paddy.
3. To get profit from selling rice, 50% of the profit will be given to member.
4. To find the market for the dry-season paddy.
5. To create the linkage between the credit and marketing.
6. To increase the income of farmers.

## Financial

The cooperative will use the share capital for purchasing paddy about 2,027,200 Baht.

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Nong Wai Agricultural Cooperative

Background

The Rice is the most important crop of Thailand. The planted area of paddy is about 55.58 million rai and annual production is about 14-16.9 million tons for both wet and dry seasons (Table 1). Rice is also the most important export earner of Thailand (Table 2).

Recently the price of paddy decreased a low level because of the severe competition among the rice exports in the world market particularly that of the U.S.A. Therefore the government promotes Thai farmers switch to other crops. However, it has been very hard to convince the rice-growing farmers, because they still need to grow rice for home consumption.

In Thailand paddy is planted in two seasons:

1. Wet-season paddy is the crop growing during June-December.
2. Dry-season paddy is the crop growing during February-June.

In Thailand paddy price policy is the most crucial farm policy which can sometimes topple the government. In the past the government tried to set the guaranteed prices for paddy but it was proved unsuccessful because the middlemen and individual price millers purchased paddy, in most case, lower than the guaranteed prices.

Area of Project

Khon Kaen province <sup>1/</sup> is one of provinces of northeast of Thailand which is far from Bangkok about 500 kilometers and the altitude is about 200 meters above sea level. The total area is about 13,404 Sq.kms or about 8,377,500 rai.<sup>2/</sup>

1/ The office of Commercial

2/ 6.25 rai = 1 hectare



The total land use is as follows:

Paddy	38.516	%
Upland crops	32.772	%
Homestead	0.162	%
Forest and swamp	28.55	%

Most soils in Khon Kaen are light texture, largely the sandy and loamy soils. The important crops grown in this province are:

- |               |   |            |
|---------------|---|------------|
| 1. Paddy      | 5 | Maize      |
| 2. Cassava    | 6 | Mungbean   |
| 3. Kenaf      | 7 | Ground nut |
| 4. Sugar cane |   |            |

In 1985-86 crop-year the total amount of paddy produced in Khon Kaen is about 446,000 tons out of 1.5 million rai of planted area (Figure 1).

Administratively Khon Kaen province is divided into 20 districts (Amphur).

There are 3 seasons in Khon Kaen i.e.,

- |           |                         |   |        |
|-----------|-------------------------|---|--------|
| 1. Summer | During February-April   | 3 | months |
| 2. Rainy  | During May-October      | 6 | months |
| 3. Winter | During November-January | 3 | months |

For the muang district of Khon Kaen the population is 304,554 and the total paddy land is 146,736 rai and the total production 44,607 tons which makes the average paddy yield of 304 kg./rai.

The Nong Wai Pioneer Agricultural Project<sup>1/</sup> covers the area of 68,860 rai in both Nom Pong and Muang Khon Kaen districts. There are altogether 5 sub-districts (Tambon) and 45 villages. The total number of farm

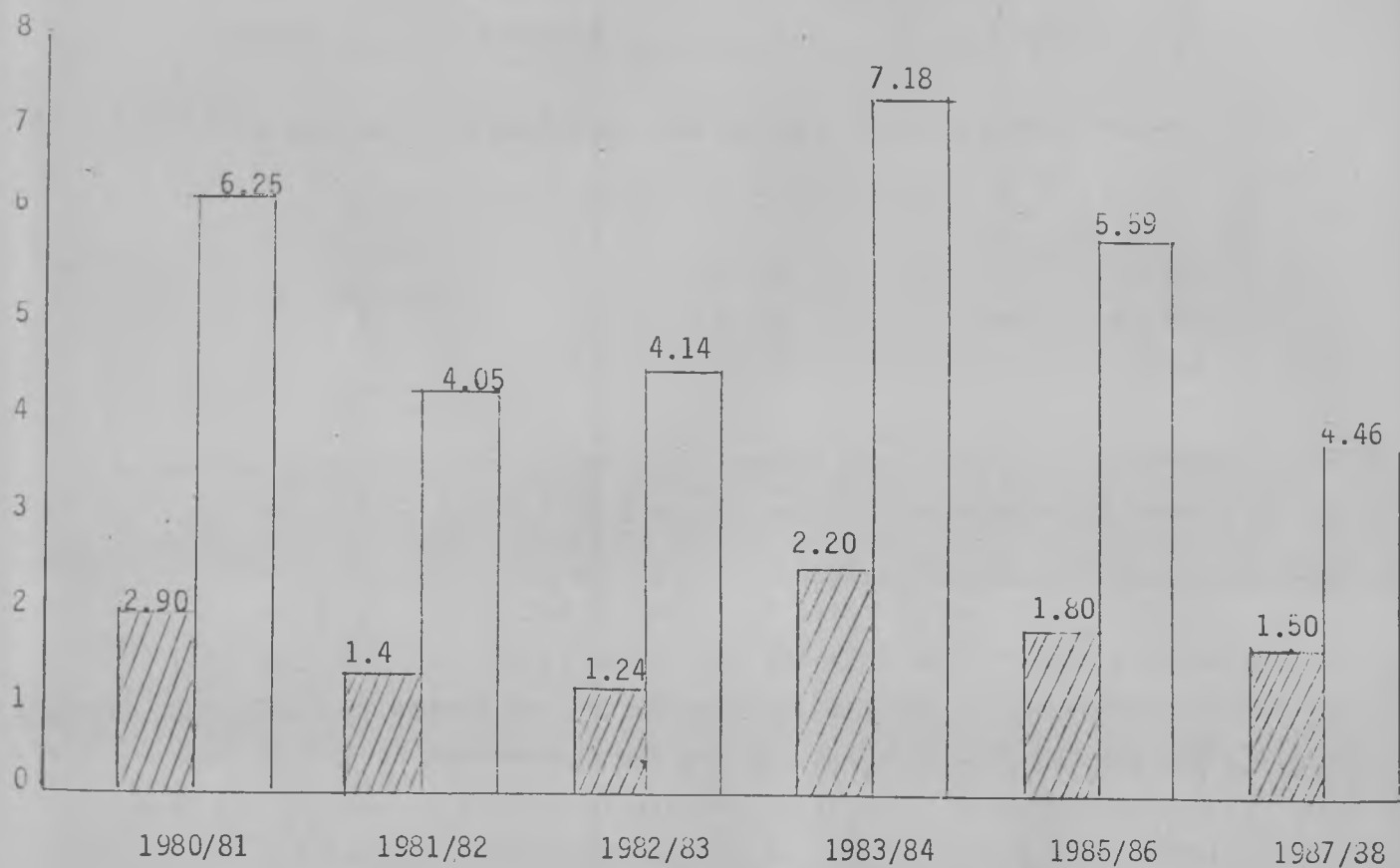
1/ The Agricultural Economics Office.

Figure 1

Harvesting Area and Paddy Production in Khon Kaen Shows

1980/1981-1985/1986

▨ Harvesting area (million rai)  
□ Total Production (Hundred thousand tons)



Source : The office of Provincial Commerce.

households in project area is 5,594.

<u>Districts</u>	<u>Sub-district</u>	<u>Area Project(rai)</u>	<u>% of Area</u>
Nom Pong	Muong Vhon	1,999.26	2.9
Muang	Sumran	12,204.33	17.7
	Sila	14,320.50	20.8
	Pralub	37,187.50	54.0
	Muang Kow	3,148.62	4.6
Total		68,860.21	100.0

Farmers in the project area can be classified by farm size as follows:

Small	0-9 rai	= 34 %
Medium	9-18 rai	= 32 %
Large	18 rai	= 34 %

Within the project area farmers grow double rice crop, the wet-season crop is between June-November, and dry-season crop is between February-May.

Generally the planted area for paddy in wet season is rather constant because farmers grow rice for home consumption. In 1983 the total amount of rice produced in the project area during wet season is 24,412 tons (Table 3) and the yield per rai is 335.84 kg. On average farmers get 74.47 baht/rai as the return to management. The total marketable surplus is only 10,300 tons and the planted area for rice is 11.46 rai per household. (Table 4)

For dry-season rice which is mainly produced for sale, the total production in 1983 is 17,316 tons or 426.61 kg./rai. The return to management is 59.44 baht. The total marketable surplus is 16,860 tons. (Table 5)

In 1984 the dry-season rice production is 13,868 tons and the average yield is 440.69 kg./rai. Farmers, therefore, could get the return to management 127.24 baht/rai. (Table 6)

Farmers in the project area have an access to several loan sources and the interest charged varies from source to source. From the survey in 1983 farmers got most of the loan (51.02% of all farmers) from the cooperative. The highest interest rate charged is the loan from merchant which is as high as 37.65% per year. (Table 7)

For the chemical fertilizer and pesticide farmers mainly purchase from merchant, 81.65% and 96.76% respectively. (Table 8, 9 and 10)

Farmers in the project area can buy the chemical fertilizer from 3 sources:

1. Marketing Organization for Farmers (MOF)
2. Cooperative
3. Merchants

### Marketing of Farm Product

During 1983 crop-year the amount of marketable surplus was 10,209 tons, or 42.19% of total production (Table 11) where farmers sold to local merchants, rice millers, and cooperative. The local merchants were the major buyers of rice from farmers in the project area, 48.15% of the total marketable surplus. (Table 12) and (Channel 1)

For paddy transportation from field, farmers fill the paddy in gun-bags, 70-75 kg./bag and have them transported to the merchants. The bags are given free of charge by the merchants but the transport charge is as follows:

<u>Distance(km.)</u>	<u>Baht/bag</u>
1 - 5	5
5 - 10	7
10 - 20	10
20 - 25	12

The truck owner generally get the commission at the rate of 5-10

baht/bag from the merchant.

Since most farmers do not have enough barn to store paddy, they have to sell most paddy soon after harvest which is during November-December. The merchants or rice millers generally make the price reduction of about 10-20% for the excess moisture. (.....)

The Cooperative Promotion Department (CPD) and the Agricultural Cooperative Federation of Thailand (ACFT) jointly introduced the Linkage Credit Programme of which farmers who get the loan from the cooperative can repay the debt in form of paddy. Under this programme, in 1983 the cooperative could collect the paddy only 436 tons. (Table 13)

Nong Wai Agricultural Cooperative (NAC) was established in September 30, 1976 by amalgamating 3 local cooperatives. The number of members of these 3 cooperatives are as follows:

1. Pra Klue Agricultural Cooperative Ltd.	787
2. Muang Khon Kaen Agricultural Cooperative Ltd.	454
3. Nam Pong Agricultural Cooperative Ltd.	45
Total	1,286

The predecessor, Pra Klue Agricultural Cooperative Ltd. was established in October 22, 1964. At present the total numbers of member of the NAC is 2,655 as compared with 5,594 farmers in the project area.

### Coop Objectives

The main objective of NAC as follow:

1. To provide loan to member for agricultural Production.
2. To supply the agricultural production inputs, for instances, fertilizers, pesticides, insecticides, agricultural equipments of tools, etc.

3. To market the agricultural produce of members or to supply members with food and other goods and services.
4. To receive saving or deposits from members.
5. To set the pumping machines for agricultural production.
6. To carry on water users management.
7. To give technical assistance to members.
8. To purchase shares or debentures of the agriculture cooperative federations.
9. To provide appropriate relief to members and their families who suffer from disaster in connection with their occupations.
10. To apply for or accept technical assistance from government or any other persons, provided it is in accordance with the policy or direction made or given by the Registrar of Cooperative society.
11. To carry on all other activities in connection with or realisation of the objects of the cooperative society.

### Loans

The important function of the cooperative is to make loans to members, in order to provide them with the capital need to run their own farms. Loans are divided into short-term loans and medium-term loans.

The short-term loans are given for the purposes of purchasing animal food seeds, fertilizers, insecticides, pesticides, and for other current farming expenses for instance, wages and family living. The short-term loans must be repaid within one year, usually after harvests, when the members get money from sale of agricultural products.

The medium-term loans are provided to members for the purposes of acquiring livestock, Land improvement and development and for buying draft animal, farm land and farm equipments have to be repaid within three years.

Rate of interest, the NAC will be charged interest at 11% on its borrowing from BAAC. The members or loanees shall be charged interest at

14% per annual.

There are 15 members of the board of directors of the NAC. They are elected by members in the annual general meeting. Among themselves they choose 1 chairman, 1 vice-chairman, and 1 secretary, and appointing the other 3 sub-committee:

1. Sub-committee for loan giving 4 members
2. Sub-committee for marketing 3 members
3. Sub-committee for water users 7 members (who are elected from the chairman of water user group)

For the management, the NAC is divided into 4 divisions:

- |                                 |   |       |
|---------------------------------|---|-------|
| 1. Cash and accounting division | 3 | staff |
| 2. Credit division              | 3 | staff |
| 3. Marketing division           | 3 | staff |
| 4. Water management division    | 1 | staff |

There are altogether 13 staff member including manager, assistant manager, and watchman.

The NAC possesses one godown (capacity 500 tons), one small truck (pick-up), one moisture measuring machine, and one paddy quality examining machine.

The current problems of the NAC are:

1. The amount of loan limit from BAAC is only 12 million bath which is only 4,520 baht per member.
2. The size of godown is only 500 tons and does not sufficient meet the demand if many members sell paddy to the NAC.
3. The number of NAC staff is not enough for the present load of work.

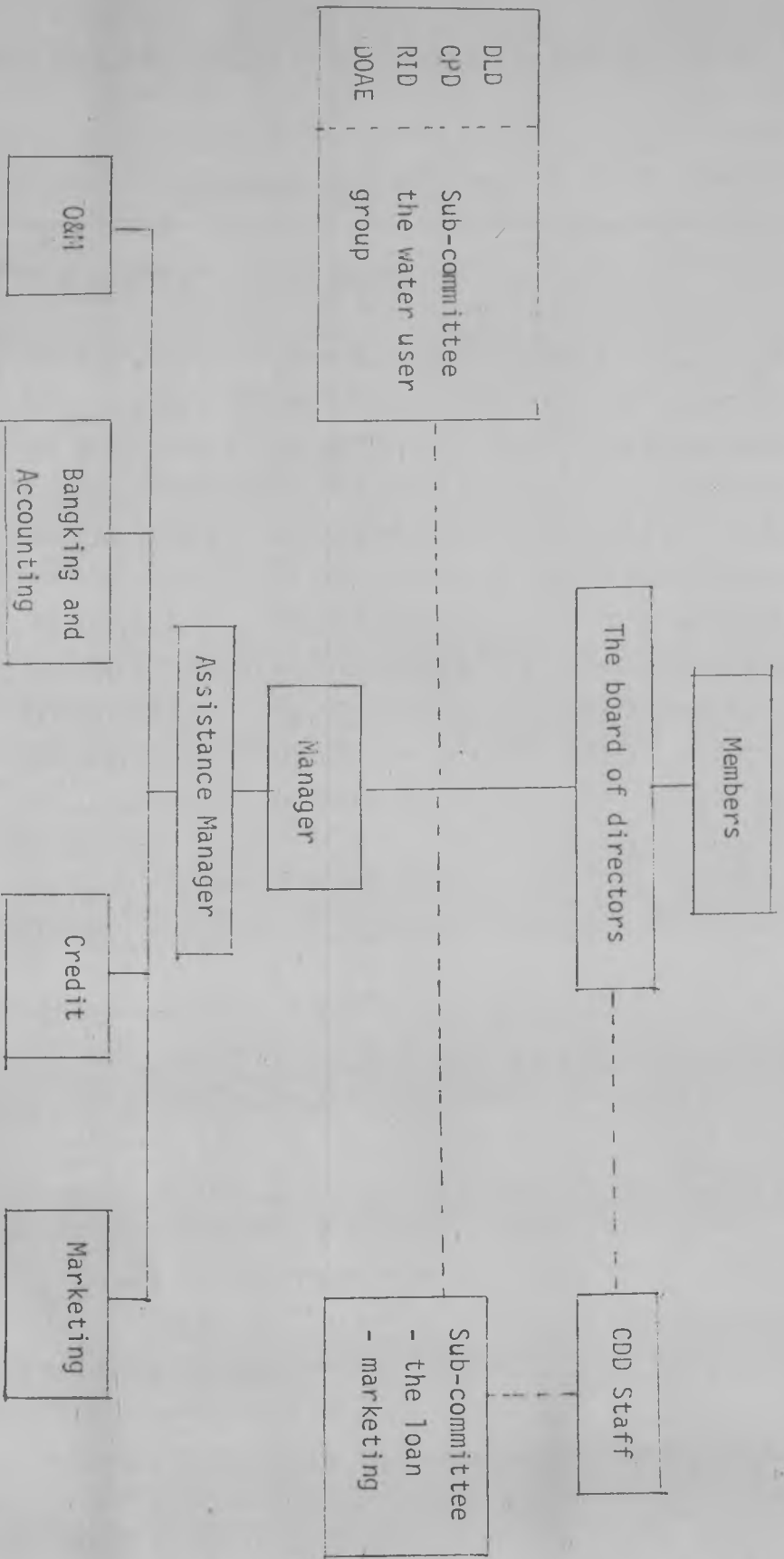
4. The NAC staff do not have enough technical know-how for their jobs.

Financial Statement

	<u>31 March 85</u>	<u>31 March 86</u>	<u>+ Surplus</u> <u>- Minus</u>
1. Shares capital	2,097,650.00	2,471,350.00	+ 373,700.00
2. Reserve fund	1,500,200.61	1,651,792.01	+ 151,591.40
3. Other capital	281,392.95	327,236.15	+ 45,843.20
4. Deposits	146,856.05	733,296.82	+ 586,440.77
5. Loan from BAAC (12 millions B)	9,378,122.38	10,477,912.94	+ 1,099,790.56
6. Loan from CPD	151,848.20	131,751.94	- 20,096.00
7. Working Capital	13,556,070.19	15,793,339.86	+ 2,237,269.67
8. Short-term Credit	6,356,830.00	7,058,788.00	+ 1,595,952.00
9. Long-term Credit	6,045,475.00	6,239,638.00	+ 760,144.00
10. Net Profit	401,432.00	494,824.77	+ 93,392.72



Structure of Organizational NAC



## Problems faced by farmers

1. The low prices of paddy
2. Farmers do not use some modern inputs (such as fertilizer) as much as the official recommended level (25 kg./rai). In the good price year farmers apply more fertilizer but for the bad price year they use very little.
3. The income from rice production is low
4. Farmers still depend on the loan given by merchants which has the high interest rate
5. Farmers do not have enough storage capacity for paddy and they have to sell paddy soon after harvest which they get low prices.
6. The reducing prices as the result of high moisture content are too much. The revalued paddy might be between 10-20% less than that of the original weight.
7. The middlemen often make the price discrimination for different varieties of paddy.
8. The truck owners take advantage over farmers by transporting paddy to sell to the middlemen who give the high commission. These middlemen will employ several tactics in weighing and moisture evaluating procedure so that the farmers get low prices for their paddy.
9. The Linkage Credit Programme has not functioned very well. The guaranteed prices were not appropriate. Some years the guaranteed prices were too high and the purchased paddy could not make profit when it was milled and some years the prices were too low and no member wanted to sell or repay for debt to the cooperative. Moreover, the payment for the paddy (for the amount exceeding the debt value) was delayed too long and farmers did not want to do business with the cooperative.
10. Many more farmers want to become the cooperative member but the cooperative can get the loan from BAAC only 12 million baht which does not sufficient to meet with the demand of potential farmers.
11. Farmers could not sell the dry-season paddy to the cooperative.

## Need and Justification for the Project

1. To organize the complete cycle of the marketing by collecting

paddy from the members about 2,000 tons a year and hire it milled at the rice mill of the Agricultural Cooperative Federation of Khon Kaen (ACFK). The milled rice is sold by the cooperative to the consumer cooperatives, general consumers, rice agent, and ACFT. By-products such as bran and broken rice are sold to member farmers who raise pigs, ducks etc. The cooperative will also collect the pigs and eggs of the members and sell them to the Pig Cooperative and other dealers.

2. To render the transportation service to members' home for both farm inputs and paddy.

3. To purchase paddy from farmers who do not have the debt with the cooperative and for those who have debt the repayment can be done in form of paddy.

4. When the cooperative get profit from selling rice, 50% of the profit will be given to member farmers.

5. To create the linkage between the credit and marketing. When farmers want to get loan for paddy production, they may repay in form of paddy and when the members want to raise pigs the cooperative can supply the feed to them as well as finding the market outlet for their products.

6. To find the market for the dry-season paddy for farmers either in terms of debt repayment or direct purchase and sell it to the rice millers in Bangkok.

7. To offer the fair prices of farm products to farmers.

8. To keep the member farmers well inform about the marketing, prices of paddy in order to equip them with the bargaining power.

### Objectives of the Project

1. To elevate the price of paddy to a higher level.
2. To increase the income of farmers from selling paddy.
3. To prevent them against being cheated by the merchants and have to sell paddy at low prices.
4. To render the service to members.
5. To reduce livestock production cost of the members.
6. To manage the dry-season paddy marketing.

7. To help farmers help themselves.

### Area of Operation

1. To organize the marketing of paddy for the members and to help them in processing so that they can get higher prices.
2. Management of rice selling will be done by packing in both big bags (100 kg. each) and small bags (5 kg. each) for selling to the consumer cooperatives, general consumers, and ACFT.
3. To manage the by product of paddy by selling to livestock raising members.

### Project Component

1. To buy the paddy from farmers at 4% higher than market prices.
2. To buy paddy at specific price for the specified grades.
3. To fix the standard for moisture and impurity in paddy.
4. To fix the transport cost of paddy.
5. To specify the time of paddy purchase from farmers.
6. To do the marketing management of milled rice.
7. To find the market for by-products of paddy milling.
8. To help livestock raising farmers in marketing of their products.
9. To render the transportation service for the farm inputs to farmers' house.
10. To advise members about the rise of farm credit.
11. To buy paddy from members in cash for those who are debt-free and get the repayment for loan of the members in form of paddy.
12. To organize the market for dry-season paddy.
13. To distribute the profit to farmers, 50% of net profit for wet-season paddy and 70% for dry-season paddy.
14. To expand the member ship to include entire farmers in the project area.

## Details of Operation under each Component

### Fixing the paddy purchased price

The purchased price of paddy which is about 4% higher than the market prices will be announced one week before harvesting. During November to February, the price quotation will subject to change every week. But during March to November the price quotation will be announced very 15 days. The announcement will be done for all villages in the project area, and cooperative member group's chairman will be notified. The announcement is also on the notice board at the cooperative.

To manage upon this matter, one sub-committee will be appointed. The members of sub-committee are:

1. One representative from the board of directors will serve as the chairman.
2. Two representatives from cooperative member groups.
3. The manager of the cooperative.
4. The marketing officer of the cooperative will serve as the secretary.

The role of this sub-committee is as follows:

1. Fixing the prices of purchased paddy and the selling prices of milled rice and the by-products from milling.
2. Collecting the marketing information of paddy and rice from the middlemen, rice millers both at local level and in Bangkok.
3. Collecting the price data of paddy and milled rice from various government agencies.
4. Managing and supervising the paddy purchase to let it follow the cooperative's policy.
5. To solve the facing problems.

## Calculation method for paddy purchasing

Paddy price and rice price are preliminary comparison data but we must also know the value of by-product so that we can consult the rice price into paddy price.

The purchase price can be calculated from total value of rice and by-product to paddy price.

### Formula

$$\text{Total value of by-product} + \text{Total value of rice} = \text{Fixed cost of processing} + \text{Variable cost of Processing}$$

Example Rice 10%                      Rice 10%

	<u>Selling price(฿/kg.)</u>		<u>Rate of end process(kg.)</u>		<u>Value</u>
H.R.	4.50	x	450	=	2,025
A <sub>1</sub>	3.20	x	150	=	480
C <sub>1</sub>	3.00	x	45	=	135
C <sub>3</sub>	3.00	x	15	=	45
B.G.I	2.50	x	72	=	180
B.G.II	1.00	x	30	=	30
			Total		<u>2,896</u>

So that                      2,896                      =                      286+V.C  
    2,609                      =                      (P.P+0.012 P.P) (14.4%/month=0.012 P.P  
    P.P                                      =                      2,578.06 ฿/ton

∴ To fix price of purchase = 2,578.06 ฿/ton  
 (P.P = Price of paddy)

If the moisture of paddy is higher than 16% the farmers must reduce the moisture until it is less than 16% before selling.

2. Advise the members about the method of reducing the paddy moisture. The paddy must be dried at farm land after harvest 4-5 days for wet season paddy and two days for dry season paddy.

3. The moisture of paddy can be tested before selling by scooping up one handful of paddy with dry hand. If a lot of paddy are striking in the palm of hand, this means the paddy is still too moist. No or small amount of paddy is left in the hand, this means the paddy is dry enough for selling.

4. Paddy moisture will be determined by moisture machine.

#### Transportation Rate

1. A truck to assembly cooperative must hire paddy from all members.
2. The rate for transportation by kilometers is :

<u>Km.</u>	<u>₱/bag</u>
1-5	4
5-10	6
10-20	8
20-25	10

3. Make sure that the truck driver do not sell the paddy to middlemen who give a commission for carrying the paddy.

4. To free bags with NAC bags must be distributed to members so that it can easily be identified.

#### Time deration for paddy purchasing

According to linkage program. The cooperative will purchase the paddy from members only 1-2 month after harvest and purchase paddy in normal working hours.

Thus for this project the cooperative will purchase the paddy every day after harvest for 1-2 months and after that the cooperative will purchase the paddy in normal working hours.

## The classification of paddy by grade

Standard from of purchasing the paddy by grade is the standard set up by the MoC.<sup>1/</sup> We use this standard to identify the quality of rice by dividing into percent.

Grade of paddy divided are as follow:

<u>Rice</u>	<u>Stricky rice</u>
100% Grade 1	Long rice 10%
100% Grade 2	Short rice 10%
100% Grade 3	
5%	
10%	
15%	
25%	

To determine the grade of farmer's paddy, Cooperative must inform the members that is not by bare eyes but use the quality examine machine to test.

## The standard measure of maisture and adulteration

1. Cooperative should explain and distribute to all members the standard measure of moisture and deduct the weight when paddy have the moisture.

The standard of weight deduction of paddy per ton (1,000 Kg.)

<u>Moisture</u>	<u>Deduct Weight (Kg.)</u>
14%	No deduction
14%-14.5%	10
14.5%-15.0%	15
15.0-15.5%	20
15.5-16%	25

<sup>1/</sup> MoC = The farmer Ministry of Commerce.



### Storage of the paddy

Most farmers does not have warehouse to store the paddy after harvest. The farmers must sell the paddy immediately. The paddy will flow to market between November-December and the purchasing prices are reduced middemen because the farmers have no money to build the warehouse.

Thus, in order to cut down the cost in storing paddy, the farmers must spend some money in buying the rice bags. This is 10 baht a piece and a ton of paddy will need 14 bags. These paddy can be stored in the house or under a raised shelter if the paddy is already dried.

### Management of Rice's market

When the paddy are collected. The cooperative will hire ACFK to process and recieve back the rice and by-product for the cooperative to sell.(Table 14)

Statistics in 1983 purchasing price of 10 % paddy of middement in Khon Kaen was 2,800 ฿/ton and 10% rice's price was 5.10 ฿/Kg. (Table 15)

The cooperative purchase the paddy 4% higher than market price. This mean purchasing price for the cooperative is 2,912 ฿/ton (2,800+112). When the cooperative hired ACFK to process. The cooperative will receive 450 kgs. of rice with 5.05 ฿/kg. cost.(see financial)

When compare the cooperative price with the individual rice mill price, the cost of rice from cooperative 5 baht lower than market price. So the cooperative rice can compete in the market

The package of cooperative rice will be in 2 sizes: 100 kgs. and 5 kgs, 5 kgs. size will be packet in pastic bag with cooperative trade mark in order to guarantee the quality of rice by sending direct local consumers and consumer cooperative and agency. For 100 kg. bag send direct of Agency and ACFT. (Channa 1 and table 16)

From interviewing some manager of ACFK who process paddy to rice for NAC.

Rice mill can process 50 tons per days. He have godown which can keep 800 tons of paddy. Working time is 270 days per year, 8 hours per day. He can process 14 <sup>hours</sup> per day and total process about 3,780 tons per year (one shift). In 1983 the highest process was 3,607.40 tons (Table 17). Rice mill is a stream engine. The stream is generated in the boiler by burning paddy husk.

#### The management market for by-products

By-products from the procession will support the livestock farmers such as pigs, duck etc. As a common practice the farmers will buying them from merchant which make the cost of livestock higher. If cooperative support food feed directly to the livestock farmers it will cut off one part of profit of the merchant. If the farmers need a loan for his livestock farm, cooperative will the farmer by sending animal food directly. So that the price of the product can be reduce.

#### Market far members who fed livestock

The cooperative will request for the pigs quotar with the pig cooperative in Khon Kaen.

The cooperative will collect the duck's eggs to send to the market to sell the consumers then.

#### Agricultural technique service

To advise the farmers use 16-16-8 fertilizer at 25 kg./rai which will increase yield and also provide fertilizer for members with free transportation cost. So that the farmers can buying fertilizers with cheaper price (no cost of transport), that will farm to increase farmer's in come.

The farmers must get the fertilizers at selling place which the farmer must pay for transportation cost 2-10 Baht per bag according to distance and quantity. In order to reduce production cost the cooperative must give free delivery service to cooperative member.

#### Farm guidance about loan for member

The credit officer is not only giving the loan to cooperative member, he must also have some knowledge in agriculture in order to give some good advice to members such as production technique use fertilizer, insecticide, pesticide and disease control of livestock.

#### Linkage loan payment with paddy and cash purchasing paddy

This program will separate from loan linkage programme (CPD.&ACFT). Owing to this loan linkage programme has problem about late cash repayment. Have limited money for cooperative, late purchase of paddy and the price is higher than market price. This will resulting in higher price of rice can not compete in the market and members who do not have the loan can not sell the paddy.

This program is the linkage for loan repayment for members and buying paddy with cash from a loan free members.

#### Operation:

1. The cooperative will deduct 50% as loan repayment from member for total selling price and the rest will pay in cash. This practice is like an incentive for member to sell paddy to cooperative and still have cash for other household expense.

2. The members without the loan, cooperative will buy in cash. But the cooperative will pay cash only 50% of the value of paddy sold. The remaining part of cash, cooperative will advise members to deposit with cooperative about 6 months at leastwise. The cooperative will pay the rate of interest 9% per year and 10% per year for 12 months.

## Management of Market for dry season crops

Because of quality of the dry season paddy is lower than wet season paddy, and moisture is higher than 16%. ACFK can not process. 2-3 rice mill in Khon Kaen and in individual rice mill in Bangkok can purchase.

The local middlemen in Khon Kaen purchase from the farmers and sell to the rice mill in Bangkok.

Method of purchase the paddy for local middlemen. They will deduct weigh for the moisture about 20-30% of total weight, distributed the bag to the owner of the truck who carry paddy and give commission 10 ¢ per bag.

The farmers will only keep the dry season paddy for seed, the rest will be sold.

Thus the cooperative should purchase the dry season paddy in cash from the farmers according to local market price by comparing market price in Bangkok. The transport service will be the same method as in purchasing wet season paddy.

Reducing the weight of moisture will use standard the reducing the weight per 1,000 kgs. as follow:

<u>Moisture</u>	<u>deduct weight (Kgs.)</u>
14%	No deduction
14%-15%	10
15%-16%	20
16%-18%	40

If paddy have moisture more than 18% the farmers must reduce the moisture to lower than 18%.

The farmers should dry the paddy about 2 days to reduce moisture.

When the cooperative have collected dry season paddy and manage to sell to rice mill in Bangkok which give the highest price by sending day to day and transportation charge will be 130 -200 ฿ per ton.

Duration of purchasing time will be between May-June.

#### Return the profit to members

1. For wet season paddy the cooperative must pay for market in two parts. First, the expense for collecting of paddy and the second is the expense to sell the rice and by-product. At first the farmers will sell paddy with a higher price than local price. Thus return of profit in selling rice, the cooperative will pay only 50% of net profit to farmer, another 50% for management of the cooperative.

2. The cooperative will purchase dry season paddy according to local price from farmers. The farmers will get the first profit from deducted moisture. When the cooperative sold the paddy to rice mill and get profit, the cooperative will deduct for management 30% of gross margin and another 70% will pay back to member of cooperative only.

#### Application of farmers to be member of the cooperative

At present the farmers in area of operation of NAC can be members of the cooperative in ways:

1. Members of BAAC
2. Members of Muang Khon Kaen Agricultural Cooperative. (MAC)
3. Members of NAC

Some families, the wife is member of BAAC but the husband is member of NAC. They can borrow loan from two sources but can pay back the loan one way only.

Thus for operation efficiency of NAC. Therefore MAC and BAAC must

not seek any additional members within this area and old members should be transferred to NAC for operation and efficiency better service to members.

NAC should held the meeting for agreement with BAAC and MAC and also meeting of the members of MAC and BAAC to inform the members about policy of NAC.

### Organization and Management

At present the board of directors have 15 persons who are selected from members in the general meeting and the board have officer from department of agriculture extense as adviser. This type of management, the cooperative have problems in operation, thus new rules and regulation must be introduced in order to correct the structure of cooperative.

1. 15 persons in the board of director should be devided into two groups 10 person should be selected from members and another 5 persons should be appointed.

2. 10 directors should be selected from the chairman of the member group in the general meeting and the directors can be selected within the 10 directors, this should be 1 chairman, 1 vice-chairman and 1 secretary.

3. The 5 directors should be appointed from various agencies.

3.1 CPD. representation

3.2 BAAC representation

3.3 Cooperative Auditor of department (CAD)

3.4 Administrated official of district

3.5 Manager of cooperative

4. Appaintment sub-committees

4.1 Sub-committee for the loan are combined

- 2 directors from the board

- 2 persons from the chairman of the group

- 1 person from BAAC
- 1 person from management
- 4.2 Sub-committee for the marketing are combined
  - 1 person from the board
  - 2 persons from the chairman of the groups
  - 1 person from management
- 4.3 Sub-committee for the water use are combined
  - 5 persons from the chairman of water use group
  - 1 person from CDP.
  - 1 person from operation and maintenance project
  - 1 person from land consolidation office
  - 1 person from management
- 4.4 Sub-committee for welfare and society are combined
  - 1 person from the board
  - 2 person from the chairman of the group
  - 1 person from the management

Management of NAC divided into 6 divisions as follows:

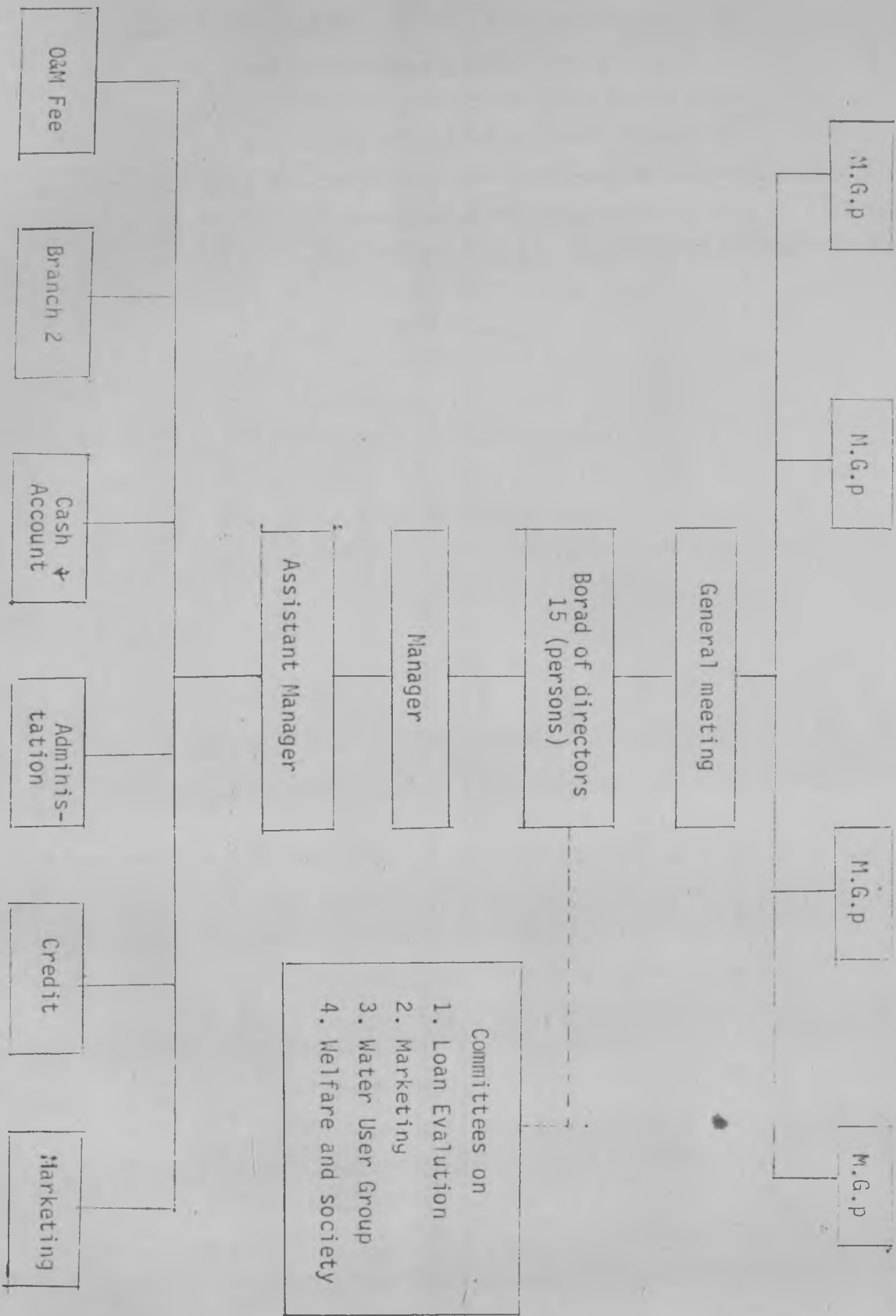
1. Division of Banking and Accounting, having duty money and accounting business.
2. Division of Branch; The division have 2 Branches: in Pralapa sub-district and Sumran sub-district. Their duties are listed below:
  - Documentation of Loan application and promotion of Loan.
  - Farm production service and guidance
  - Collection order and supply of farm inputs
  - Working follow the policy of headquarter.
3. Division of credit and farm guidance; having duty
  - Control branch
  - Documentation of Loan application and promotion of Loan.
  - Farm production service and guidance
4. Division of administration; having duty to correspondence and service.
5. Division of Marketing; having duty as listed belows:

- Purchasing paddy
- Selling the rice and by product of rice
- selling of farm inputs
- Transport services of inputs and output

6. Division of operation and maintenance of irrigation system; having duty to collect operation and maintenance fee of irrigation water and use of the fee for maintenance and repairs of irrigation system.



Structure of NAC



## Financial

1. The BAAC give a loan to NAC only 12 million Baht. The cooperative can repayment about 87.44% of the loan during a year. The members can repayment about 88.80 % of the loan during a year.

2. Calculation method method for cost sold. The cost sold of rice is about 5.05  $\text{B}/\text{kg}$ .

3. The cooperative has the own capital about 2,471,000 Baht. This project want cash about 2,027,200 Baht for purchasing paddy.

4. If the cooperative can increase 6% growth for division credit and 40% growth for division Market, he has net profit about 477,480 Baht in 1989.

Repayment with BAAC by coop and coop by members

(฿,000)

Years	BAAC			Members		
	Loan during a year	Repayment during a year	Balance	Loan during a year	Repayment during a year	Balance
A/P			11,010			9,737
1982	1,150	2,931	9,229	3,120	3,684	9,173
1983	6,122	7,127	8,224	5,088	4,834	9,427
1984	7,906	8,311	7,819	6,867	5,955	10,339
1985	5,988	4,429	9,378	7,874	5,811	12,402
1986	8,758	7,658	10,478	8,007	7,110	13,299

Cost of process/M.T. (1,000 kgs.)

Fixed Cost

1. Transport of paddy (sent ACFK)	20	₱
2. Carry paddy	28	
3. Hire	120	
4. Package (6 Bags x ₱ 15)	90	
5. Transport of rice (6 Bags x ₱ 4)	24	
6. Hire of package for bran	4	
Total Fixed Cost	<u>286</u>	

Variable Cost

7. Price of paddy/Ton (10% paddy in open market=2,800 Coop increase price 4% = 112)	2,912	
8. Cost of fund and storage 14.4%/Year (Calculate = 1 month)	34.94	
Total Variable Cost	<u>2,975.28</u>	
Total Cost	<u><u>3,232.94</u></u>	

Calculated Cost sold for 10% Rice (See Table 14.15 @ 8.7)

Rice	450 kgs. x @ 5.05	=	2,269.04	₱
A <sub>1</sub>	150 kgs. x @ 3.60	=	540.00	
C <sub>1</sub>	45 kgs. x @ 3.20	=	144.00	
C <sub>3</sub>	15 kgs. x @ 3.20	=	48.00	
B.G.I	72 kgs. x @ 2.70	=	194.40	
B.G.II	30 kgs. x @ 1.25	=	37.50	
Total			<u><u>3,232.94</u></u>	

NAC

Cash flow

Price of Paddy 1 ton = 1,578 B

Value of product 1 ton = 2,896 B

	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Purchasing (Ton)	300	500	200	-	-	-	-	-	-	-	-	-
Sold (Ton)	200	200	150	150	150	150	150	150	150	180	200	200
Pay (B,000)	773.4	2,320.2	515.6	386.7	386.7	386.7	386.7	-	-	-	-	-
Receive (B,000)	573.8	573.8	434.4	434.4	434.4	434.4	434.4	434.4	434.4	434.4	579.2	579.2
Balance	(199.6)	(1,746.6)	(81.2)	47.7	47.7	47.7	47.7	434.4	434.4	434.4	579.2	579
Cumulative surplus	(199.6)	(1,946)	(2,027.2)	(1,979.5)	(1931.8)	(1,884.1)	(1836.4)	(1,402)	(967.6)	(533.2)	46	625.2

## NAC

## Balance Sheet

March 31,

(In Baht ' 000)

	1982	1983	1984	1985	1986
Cash	79.00	17	26	203	223
Debtors of Trade	1,046	1,226	144	210	644
Debtors of Loan	9,134	9,388	1,045	12,384	12,972
Interest non-receive	950	831	844	932	832
Inventory	2,629	427	162	63	253
Paddy program	-	-	-	821	2,181
Other current	50.00	89	248	266	308
Total Current	13,888.00	11,978	11,880	14,877	17,413
Fixed Asset	528.00	476	682	570	476
Other Asset	80	90	90	135	93
Total	14,496.00	12,544	12,652	15,582	17,982
Loan	9,077.00	8,091	7,705	9,283	10,402
Credit Paddy Program	-	-	-	821	490
Credit Trader	1,962.00	1,190	502	411	619
Other Liabilities Current	785.00	389	341	333	1,105
Total Current	11,824	9,670	8,548	10,848	12,616
long term loan	323.00	285	228	190	152
Other Liabilities	60.00	101	146	272	268
Total Liabilities	12,207	10,056	8,922	11,310	13,036
Own Capital	1,146.00	1,419	1,725	2,089	2,471
Reserve fund	566.00	812	1,101	1,500	1,652
Accumalate	179.00	226	214	282	328
Net profit	398.00	31	690	401	495
Total	14,496.00	12,544	12,652	15,582	17,982

NAC  
Income statement  
March 31,

	1982	1983	1984	1985	1986	Average
Service	1,470	1,593	1,723	1,804	1,964	1,710.80
Sales	13,249	5,092	3,025	2,823	2,708	5,379.40
Cost of service	1,007	1,157	1,050	1,116	1,216	1,109.20
Cost of goods sold	12,871	4,913	2,521	2,566	2,223	5,018.80
Gross Margin of credit	463	436	673	688	748	601.60
Gross Margin of goods sold	378	179	504	257	485	360.60
Less-Expenses:						
Salaries	206	267	279	304	367	284.60
Depreciation	59	65	80	122	119	89.00
Miscellaneous	287	439	356	321	480	376.60
Total Expense	552	771	715	747	966	750.20
Other Revenue	109	187	228	203	228	191.00
Net profit	398	31	690	401	495	403.00
1. Current Ratio	1.17	1.24	1.39	1.37	1.38	1.31
2. Quick ratio	0.95	1.19	1.37	1.37	1.36	1.25
3. Debt ratio	1.19	1.25	1.42	1.38	1.38	1.32
4. A/R/sales(%)	7.89	24.08	4.72	7.44	23.78	13.58
5. Inventory/sles(%)	19.84	8.39	5.36	2.16	9.34	9.02
6. A/P/sales(%)	14.81	23.39	16.60	14.56	22.86	18.44
Profitability ratio:						
7. Gross Margin/ service%	31.50	27.37	39.06	38.14	38.09	34.83
Gross Margin/sale (%)	2.85	3.52	16.66	9.10	17.91	10.00
8. Net profit/sales %	2.70	0.46	14.53	8.67	12.60	7.39
9. return on total assets (%)	12.75	0.25	5.45	2.57	2.75	2.75
10. Return on Net worth (%)	34.73	0.24	40.00	19.20	20.03	15.95
11. Service Growth	7.7	7.72	8.16	4.70	8.87	5.89
sales Growth		(61.57)	(40.59)	(6.68)	(4.07)	(22.58)

## NAC

## Estimation of Cash Needs

(B'000)

	1986	1987	1988	1989	Remarks
Service	1,964.00	2,081.84	2,206.75	2,339.15	6% growth
Cost of service	1,216	1,353.20	1,434.38	1,520.45	65% of service
Cross Margin service	748	728.64	772.37	818.70	35% of service
sales	2,708.00	3,796.20	5,307.68	7,430.75	40% growth
Cost of sales	2,225	3,412.08	4,776.91	6,687.68	90% of sales
Gross Margin sale	485	379.12	530.77	743.07	10% of sales
Total Gross Margin	1,230	1,107.76	1,303.12	1,561.77	
Less Expense:					
Salaries	367	389.02	412.36	437.10	6% increase
New Employees	-	-	150.00	300.00	10 persons
Operating Exps.	480	504	529.2	555.66	5% increase
Depreciation	119	95	95	95	
Total Exp.	966	988	1,186.56	1,387.76	
Other Revevnue	228	250.8	275.88	303.47	10% Growth
Net Profit	492	370.56	392.46	477.40	
with drawal	246	185.28	196.23	238.74	50%



## NAC

## Projected Funds Flow

(P'000)

	1986	1987	1988	1989
Net profit	492	370.56	392.46	477.48
- Depreciation	119	95	95	95
Funds from operation	611	465.56	487.46	572.48
- with drawals	246	185.28	196.23	238.74
- Fixed assets purchase		95	95	95
Internally generated				
- Funds		185.28	196.23	238.74
Working Capital Required to support sales				
- Inventory	253	275.82	300.70	327.82
- A/R	644	731.46	830.79	943.61
- A/P	(619)	(733.14)	(868.33)	(1,023.45)
	278	274.14	253.16	242.98
Increase Required in working capital		(3.86)	(10.98)	(20.18)
Net Cash Flow		181.42	185.25	318.56
Cumulative Surplus		181.42	(3.83)	241.73
Cash Balance	365	546.42	731.67	950.23

## NAC

## Cash Budget

	1987	1988	1989
Sales & service	5,873.04	7,514.43	9,769.90
Increase in A/R	(87.46)	(88.33)	(112.821)
Collection	5,785.58	7,415.11	9,657.03
Payments			
Cost of goods sold & service	4,765.28	6,211.29	8,203.13
Increase in Inventory	(22.82)	(24.38)	(27.12)
Purchases	4,742.46	6,186.41	8,181.01
Increase in A/P	114.14	135.19	160.12
Payment	4,628.32	6,051.22	6,020.89
Salaries	389.02	412.36	437.10
New Employees	-	150.00	300.00
Operating Exp.	504.00	529.20	555.66
witharawls	185.28	196.23	238.74
Fixed Assets Purchase	95	95	95
Total Payments	5,801.62	7,434.01	9,647.39
Surplus/(Deficit)	181.42	(185.25)	218.56
Cunulative Surplus	181.42	(3.33)	214.73
Cash Balance	546.42	731.67	950.23

Budget

1	Warehouse	=	1,000,000	Ø
1	Truck	=	500,000	
	Salary	=	120,000	
1	Set Computer	=	300,000	
	Training	=	<u>30,000</u>	
	Total	=	<u>1,950,000</u>	Ø

## Recommendation

1. The warehouse capacity of the cooperative of only 500 tons is no longer adequate to service its member. Hence, the cooperative must to build another warehouse capacity of 1,000 tons adjacent to the current one. The budget can to build about 1 million Baht.

2. The cooperative do not have the truck to carry inputs and outputs for farmers' service. Hence, the cooperative must to buy 1 truck about 500,000 Baht.

3. The cooperative should hire 2 credit officer, 2 marketing officer and 1 driver about 120,000 B/year.

4. The cooperative must buy 1 set computer for keep data and make accounting, about 300,000 Baht.

5. Training officer for the technique computer.

Channel 1

Channel Marketing of Paddy and Rice other Area

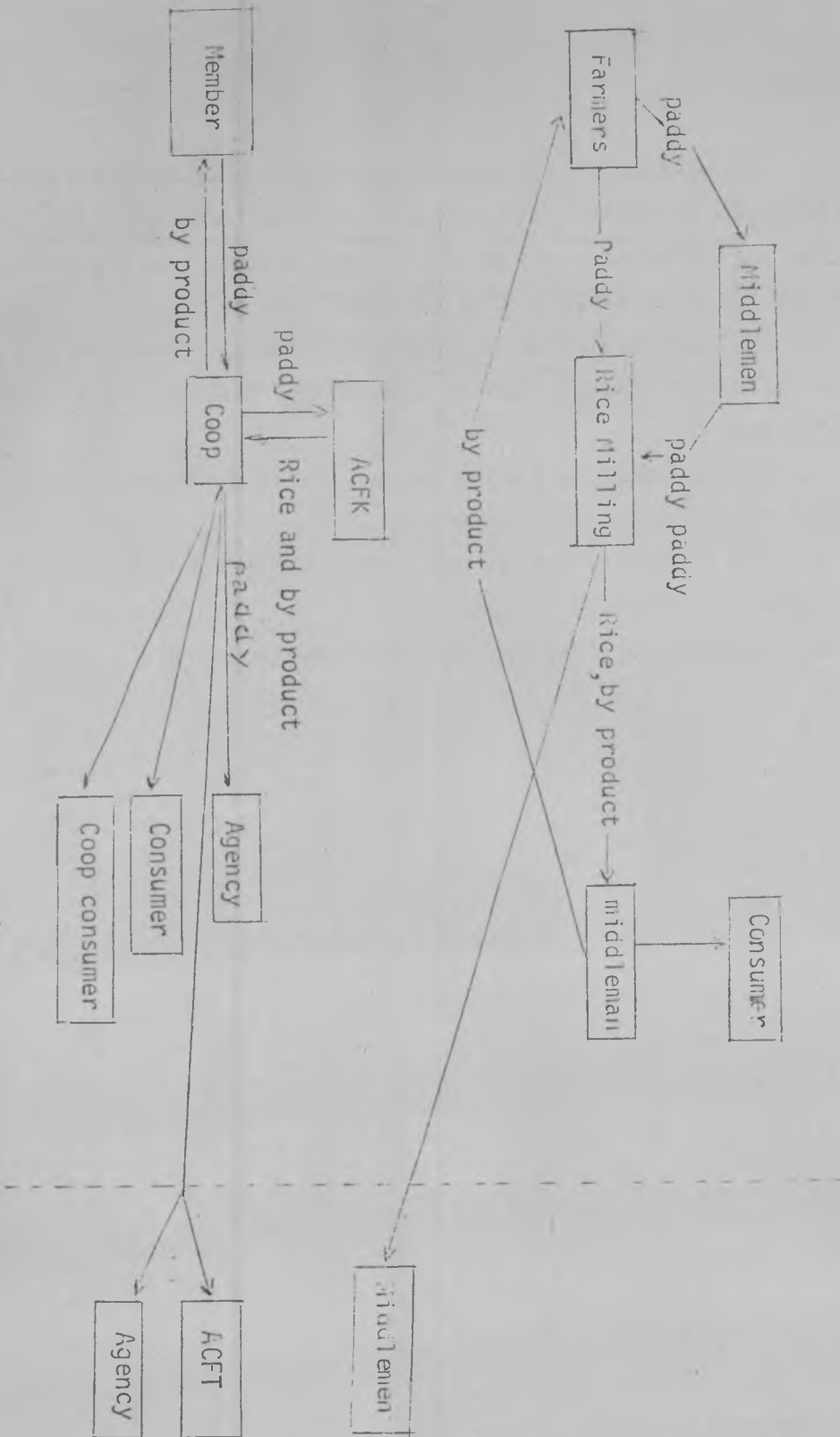


Table 1

Planted Area production yields of Economics plant all country

Crop year 1980/81 - 1984/85

Item and Crop name	Crop year				
	1980/81	1981/82	1982/83	1983/84	1984/85
Planted Area (rai)					
1. paddy of the wet crop	56,811,890	56,392,231	56,171,000	53,114,650	55,418,804
2. paddy of the dry crop	3,227,695	3,578,068	3,962,792	4,481,933	@
3. Maize	8,960,222	9,795,519	10,494,157	10,551,948	11,126,000
4. Casava	7,940,432	7,726,384	3,551,545	8,779,504	8,838,456
5. Sugar cane	2,926,786	3,857,000	3,645,323	3,606,584	3,414,876
6. Jute	1,068,340	1,166,327	1,357,256	1,342,877	1,148,180
Production yields					
1. paddy of the wet crop	15,405,382	15,757,745	14,774,422	16,942,702	16,608,905
2. paddy the dry crop	1,962,712	2,016,578	2,104,094	2,606,241	@
3. Maize	2,997,882	3,448,538	3,002,304	3,552,391	4,138,872
4. Cassava	17,744,000	17,787,893	18,988,522	19,985,327	20,044,367
5. Sugar cane	19,853,657	30,200,000	24,407,406	23,869,480	22,818,000
6. Jute	211,323	193,833	199,608	234,784	187,190
Yield /rai(kg)					
1. paddy of the wet crop	271	279	263	292	300
2. paddy of the dry crop	606	564	531	582	@
3. Maize	335	352	286	337	372
4. Cassava	2,235	2,302	2,220	2,276	2,268
5. Sugar cane	6,783	7,830	6,696	6,613	6,682
6. Jute	193	166	147	175	163

Source : Agricultural Economics office.

Channel 1

Channel Marketing of Paddy and Rice other Area

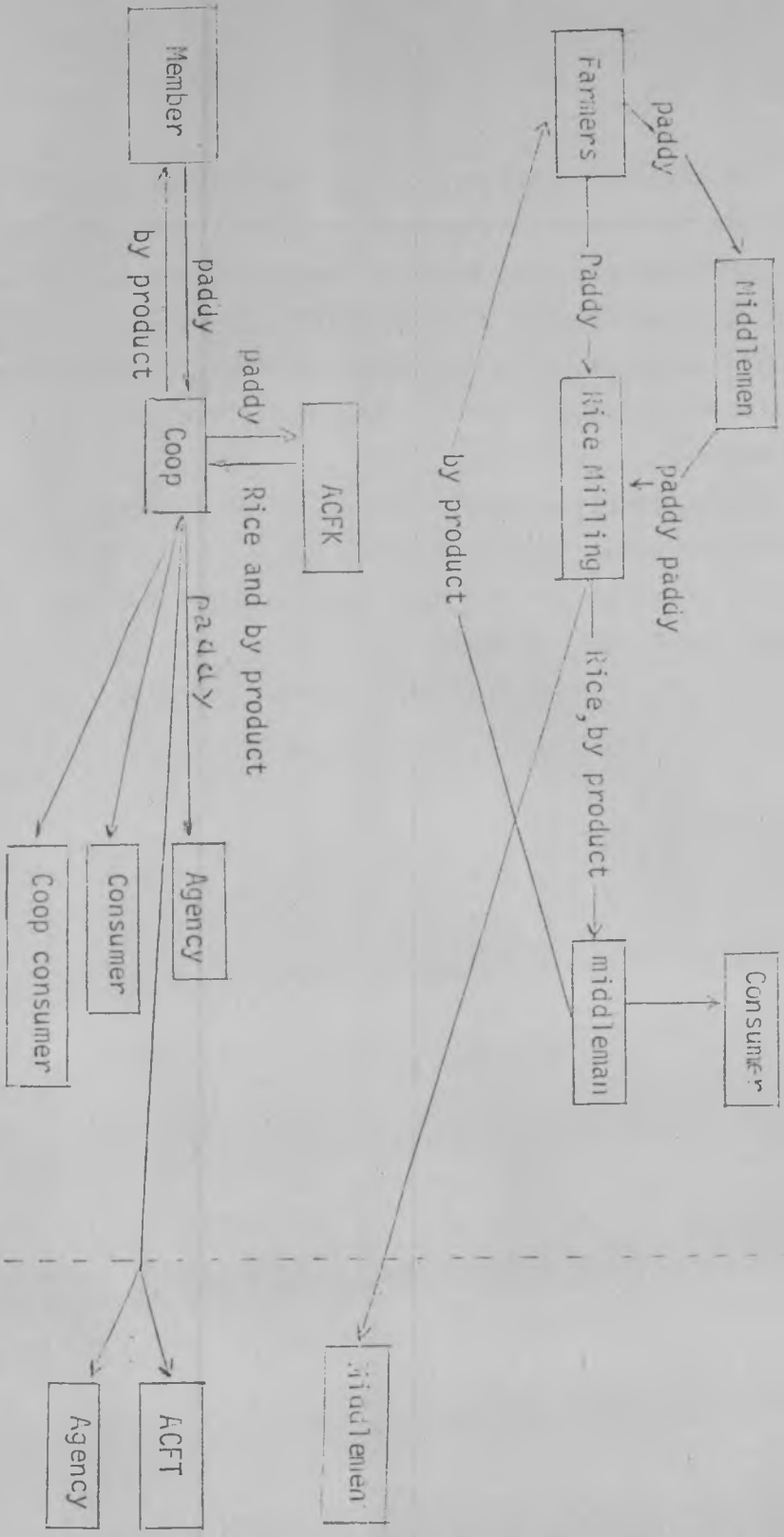


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6. Jute	193	166	147	175	163

Source : Agricultural Economics office.



Table 2  
Quantity and Value for the Commodity Export

Year	Rice		Rubber		Maize		Sugar	
	Metricton	Million ₪	Metricton	Million ₪	Metricton	Million ₪	Metricton	Million ₪
1980	2,799,724	19,508	455,006	12,351	2,202,510	7,299	451,699	2,975
1981	3,031,783	26,366	472,124	10,841	1,574,608	8,349	1,118,659	9,579
1982	3,784,143	22,510	544,487	9,490	2,830,701	8,330	2,206,240	12,932
1983	3,476,480	20,157	555,060	11,787	2,658,679	8,486	1,536,898	6,338
1984	4,618,532	25,939	645,621	13,001	3,116,742	10,050	1,235,626	5,222
1985	4,005,068	22,256	690,790	13,576	2,780,767	7,609	1,709,533	6,148

Source : Department of customs

Table 3

Planted area, production yield per rai  
The Farmers in project area 1981-85 (rai)

Year	Wet season			Dry season		
	Planted area (rai)	Total products (ton)	Yield/rai (kg.)	Planted area (rai)	Total products (ton)	Yield/rai (kg.)
1981	63,453	22,232.66	350.38	15,100	8,006.02	530.2
1982	67,252	21,583.86	320.94	14,762	7,124.14	482.6
1983	68,605	24,412.40	355.84	40,589	17,315.67	425.61
1984	67,583	24,329.88	360.00	31,463	13,867.63	440.69
1985	68,675	20,634.09	300.46	25,783	11,233.41	435.8

Source : Operation and Maintenance Project.

Table 4

## Income of the wet season crop/rai 1983/1984

Planted Area/household (rai)	11.46	
Yeild of product/rai (kg.)	355.84	4 %
Price of paddy (B/kg.)	2.745	2.854
Income for product	<u>976.78</u>	
<u>Cost Input</u>	<u>117.12</u>	
Seed (7.95 kg./rai)	24.26	
Fertitizer (13.57 kg./rai)	60.88	
Insecticied	11.53	
Equiment	8.39	
Other	12.06	
<u>Variable Cost</u>	<u>274.46</u>	
Rent land	144.24	
Wage	133.39	
Depreciation of Equipment	4.93	
Maintenance equipment	1.62	
Oil	8.33	
Interest	11.95	
<u>Net Income</u>	<u>585.20</u>	
Reture Wage for Household	510.73	
Manegement & Reture of fund	74.47	113.47

Source : Agricultural Economic office

Table 5

## Cost of the dry season crop in 1983

Item	Cash	Non-cash	Total
<u>Variable Cost</u>	436.94	494.31	931.25
1. Wages for part harvesting and carry production	229.94	421.96	651.90
- Land prepare	106.24	140.64	146.88
- Plant	18.54	83.98	102.52
- Maintenance	4.59	25.27	29.86
- Post harvest, thresh carry product	100.57	172.07	272.64
2. Materials	206.48	30.83	237.31
- Seed (11.23 kg.)	5.40	26.85	32.25
- Fertilizer	147.24	2.67	149.91
- Insecticide	14.46	1.31	15.77
- Oil	19.74	-	19.74
- Equipment	9.76	-	9.76
3. Others	0.52	41.52	42.04
- Maintenance Agricultural Equipment	0.52	-	0.52
- Interest of fund	-	41.52	41.52
<u>Fixed Cost</u>	1.7	121.06	122.76
- Rent Land	1.7	116.48	118.18
- Depreciation of equipment	-	4.58	4.58
Total Cost	438.64	615.00	1,054.01
Yield/rai (kg.)			426.61
Price of paddy/kg. (₹)			2.61
Income/rai (₹)			1,113.45
Net profit/rai (₹)			59.44

Source : Agricultural Economic Office

Table 6

## Cost of dry season crop in 1984

Activities	Cash	Non-cash	Total
<u>Variable Cost</u>	438.96	393.37	832.33
1. Wages for part harvesting and carry production	281.36	315.47	596.83
- Land preparation	43.39	77.14	120.53
- Planting	45.36	76.15	121.51
- Maintenance	0.39	49.43	49.82
- Post harvest, thresh carry Production	192.22	112.75	304.97
2. Materials	157.08	40.79	197.87
- Seeds (13.63 kg.)	4.47	39.55	44.02
- Fertilizer	99.92	0.76	100.68
- Insecticide	12.11	0.48	12.59
- Fuel	30.82	-	9.76
- Agricultural Equipment	9.76	-	9.76
3. Other	0.52	37.11	37.63
- Maintenance equipment	0.52	-	0.52
- Interest of funds	-	37.11	37.11
<u>Fixed Cost</u>	1.7	121.06	122.76
- Land Rent	1.7	116.48	118.18
- Depreciation of equipment	-	4.58	4.58
	440.66	514.43	955.09
Total Cost (Baht)			955.09
Yield/rai (kg.)			440.69
Price of paddy/kg.			2.456
Income/rai (Baht)			1,082.33
Net profit/rai (Baht)			127.24

Source : Agricultural Economics Office.

Table 7

## Source of Loan and Rate of interest in 1983

Item	Commercial Banks	BAAC	NACS	Merchant	Relation ship	Neighbour
Source of Loan (% of Loan by farmers.)	3.29	2.23	51.02	9.52	19.98	3.96
rate of Interest (% / year)	18.74	14.00	14.00	37.65	12.04	23.97

Source : Agricultural Economics Office.

Table 8

Fertilizer Method and Source of Farmers in Project Area  
1983/84

<u>Fertilizer</u>	<u>% Farmer Requirement</u>	<u>Fertilizer Purchasing Method</u>	<u>% Farmers Requirement</u>
Merchants	81.65	Cash	70.27
Office Government	6.64	Credit	23.06
Cooperative	11.71	Input supply	6.67
Total	<u>100.00</u>		<u>100.00</u>

Source : Agricultural Economics Office.

Table 9

Insecticide Method and Source of Farmers in Project Area  
1983/84

<u>Insecticide Source</u>	<u>% Farmers Requirement</u>	<u>Insecticide Purchasing Method</u>	<u>% Farmers Insecticide</u>
Merchants	96.76	Cash	77.77
Cooperative	2.73	Credit	21.72
Office Government	0.51	Free	0.51
Total	<u>100.00</u>		<u>100.00</u>

Source : Agricultural Economics Office.

Table 10

## Using Input Supply Production in Project Area

Item	Year 1982/83	Year 1983/84	( kg/rai )
Seeds (kg.)	6.15	7.95	
Fertilizer	4.70	13.57	
Insecticide	4.59	11.53	

Source : Agricultural Economics Office.



Table 11

## Paddy yield and paddy Extention in 1983

Item	Wet-season paddy	%	Dry-season paddy	%	Total
Total production	24,412.40	100.00	17,315.67	100.00	
Kept for seed	756.78	3.10	455.40	2.63	
Kept for consumption	12,836.04	52.58	-		
Rent and Other	519.98	2.13			
Sold for Farmer	10,299.60	42.19	16,860.27	97.37	33,025.99
Sold for member	4,502.14	44.10 %	10,062.39	44.10 %	14,564.53

Source : Agricultural Economics Office.

Table 12

Source of purchasing paddy in 1983/84

For the farmer in the Project Area

<u>Source</u>	<u>%</u>
1. Merchant in rural	48.15
2. Rice Milling	46.34
3. Coop	4.27
4. Other (Neighbour)	<u>1.24</u>
	<u>100.00</u>

The office Agricultural Economics

Table 13

The programme linkage of credit for product annual managing  
- for Rice.

Year	Avl. price paid for 5% paddy in open market (B/ton)	Price paid for 5% paddy in the programme (B/ton)	Amount of paddy by NACS (ton)
1981	3,400	3,500	231
1982	3,150	3,750	644
1983	2,700	3,300	436
1984	2,950	2,800	44
1985	2,900	2,800	320

Table 14

Average recovery/m.t. of paddy (1,000 kg.) 1

Input (1,000 kg.)	Rice Output (1,000 kg.)						
Paddy Grade	Head Rice	A <sub>1</sub>	C <sub>1</sub>	C <sub>3</sub>	B.G.1	B.G.2	Husk
5%	460	145	40	15	75	30	235
10%	450	150	45	15	72	30	238
15%	450	147	45	18	70	30	240
L.G.S.10%	450	150	30	12	75	30	253
S.G.S.10%	400	200	30	14	75	30	251

Note ; B.G.1 = Bran grade 1

B.G.2 = Bran grade 2

L.G.S = Long grade sticky rice

S.G.S = Short grade sticky rice

Source : Khon Kaen Agricultural Cooperative Federation

Table 15

Average price of paddy, Rice and by product in Khon Kaen provincial 1980-1985

Year	Paddy (฿:ton)		Rice (฿:100 kgs.)						
	5%	10%-15%	5%	10%-15%	A <sub>1</sub>	C <sub>1</sub>	C <sub>3</sub>	B.G.I	B.G.II
1980	3,010	2,865	580	540	365	330	330	255	130
1981	3,430	3,245	684	626	380	305	305	268	130
1982	2,990	2,850	550	530	380	310	310	249	130
1983	2,970	2,800	530	510	360	320	320	270	125
1984	2,995	2,750	520	490	410	355	355	305	120
1985	2,865	2,615	505	485	380	310	310	280	95

Source : The Office of provincial commerce.

Table 16

The rice sold by NAC

<u>Year</u>	<u>Value (Ø)</u>
1984	207,486.25
1985	1,255,290.00
1986	654,445.05

Source : NAC

Table 17

Value of input for process of ACFK

Paddy Quantity for process of ACFK (ton)

Year	1982	1983	1984	1985	1989
Paddy	1,576.87	3,607.4	1,436.7	1,471.0	2,490.4

FIRST

ICA TRAINING COURSE FOR STRENGTHENING MANAGEMENT OF  
AGRICULTURAL COOPERATIVES IN ASIA

NEW DELHI / BANGKOK / TOKYO / SEOUL

1st November 1986 - 3rd May 1987

PROJECT PREPARED DURING HOME COUNTRY ASSIGNMENT

**Project Title:** Establishment of a Feed Mill in  
Thachang Agricultural Cooperative,  
Thachang District. Singburi Province.  
**Country:** Thailand.

**Prepared by:** Mr Apichart Treejaturun

Funded by the Government of Japan  
and

Executed by the International Cooperative Alliance  
in collaboration with its member organisations in  
India, Thailand, Japan and the Republic of Korea.



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The Feasibility study concerning The Establishment of Feed Mill in THA CHANG Agricultural Cooperative LTD " is studying which is used the basic concept of ICA Training Course for Strengthening Management of Agricultural Cooperative in South East Asia

Mainly objective of the case is the feasibility study in the establishment of Feed mill for utilize the integrated approach and activity which strengthen and expand managment system aimed at value addition of Paddy which is the main and most importance crop in this district area. The operation of Feed Mill will use the by-product of Rice milling as Raw Material or Feed stuff especially Bran and Broken Rice. In finally goal, it expected to increase the income of the farmer by getting more income from animal raising and increasing activities and profitability of Cooperative in processing in addition to credit and input supply activities.

Information and Data were collected by the assistance of the Directors, management staffs and CPD officers, <sup>and</sup> from the Cooperative Annaul Reports, interviewing in questionair and visiting to the members and the officer of Swine Raising Training and Research Center gave some documents of Feed, animal raising management and the Training programes.

Technical analysis of the capacity and cost of Feed Mill receieved the consultation by Mr.Krisna Teerasak of Krisanakol Loha, and the consultant in financial analysis is Mr.Krailuk Boonma of THAI Farmer Bank. and finally My Senior officers in Training Division, CPD, have given many advice, and suggestion and assist in prove my English.

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## Summary

THA CHANG AGRICULTURAL COOPERATIVE LTD was registered on 23 August 1966 and merged with other small Cooperative and was final registered under the Cooperative Law A.D. 1968 on 1<sup>st</sup> July 1975. This Cooperative is Located and operated in the area cover THA CHANG District in Singburi Province.

Total Farm land area is 22,548 rai (3,608.67 hectar) 85% of area is in the irrigation area and 1,070.56 hectar in the land consolidation project.

Main Crop are Paddy (77.6% of land) and garden crop such as banana, coconut. Paddy is cultivated twice a year and not fructuated in productivity so much overage yeild/hectar in 1986 is 3.23 MT/hectar for the first crop and 4.9 MT/hectar for the second crop. Total productivity is 9,035 MT in this first crop seasoning.

The farmer will sell most of their Paddy to the Trader or Rice Miller or Cooperative depend upon price of Paddy and their conveniency many cooperative's member sold their Paddy to the Trader/Rice Miller at the price lower than sold to the Cooperative because the Trader or Rice Miller generally purchase Paddy at the farmer's house (or field) and pay to it in cash then, they had no cost of marketing.

The farmer will keep 100 kg of Paddy for Seeding/hectar. Total marketable surplus is 8,835.6 MT in 1986 first crop season.

The cost of production of Paddy was around 4,682 Baht/per hectar and revenue was 6,912.20 Baht/hectar; so the Net Income/hectar of Paddy in the first Corping season in 1986 was around 2,239.20 Baht.

Other income generating activities more than half of member have other activities generated their income such as labour wage, small shop trading etc. and the cooperative is running some project for encourage the member's occupational such as poultry to the cooperative youth's group, handicraft to the cooperative wife's group.

Animal husbandry in this District consisted of 1,632 of cattle 1,706 of pig, 10,536 of poultry and 140,000 in fishery. Many farmers have usually free raised their animal to find itself sufficing feed such as straw, grass etc. So, the livestock management should be improved. Other problems of the member farmer also lack of land and capital, uncertainly and unfavourable price of products, destructive insect and plants diseases. In this conditions, most of the farmers member have not adequested Net income for earning or for improve their living standard.

The project the establishment of Feed Mill for livestock Extension in THA CHANG Agricultural Cooperative LTD. has the main objectives to

1. to occupation extension to increase the farmer income in animal husbandry.
2. to increase the activity of Cooperative in Vertical Integration in Processing activity and linkage with Credit and Input Supply activities.
3. to addition the value of Paddy and By product as Bran.

The details of operation of the project are composed of

1. Preparation step. Cooperative should set the meeting of Board of Directors to make discussion and find the accepted resolution and should persuade the member to have participate in holding the additional share for cost of investment.

2. Operation of the project should have the Livestock Introduction and Extension plan in linkage with credit and marketing business and coordinate with the district officer of Livestock Development Dept to joint working in farm guidance and Extension.

3. Processing of Feed Mill. According to Feed can be blended to many formulas. In this project, choosed one formula for calculating which is Feed Formula growing pig (60-100 kg) which cost is 390.35 baht/100 kg.

4. Technical analysis : The suitable scale and type of machine have capacity of milling 5 MT/day composed of 1 vertical type Feed Mixer 1,000 kg/time, 1 Horizontal type Feed Mixer 100 kg/hr, 1 grinder, 3,000 kg/hr., 1 Pelleting Machine 500 kg/hr. and packing machine. The total cost with equipment and setting expense is 311,650 baht.

5. Working capital consist of

1. Capital for investment cost collected from additional share holding from the members which is 311,650 baht.

2. Capital for operation cost borrowing from CPD which is 300,000 baht.



Organization and management

Organization is changeless in the structure and authorities of Board of Director and General Manager. It necessary to set up the processing sector which require 1 chief and 2 workers whom have fully responsibilities on Feed Milling, Feed Marketing and Coordinating or link with other activities and officer of Livestock Development Department.

Profitability of the Project is considered to Economic and Financial analysis.

The total cost in operating in the project consist of

1. Cost of Investment as Fixed cost invested in Building, machines and equipment.
2. Cost of Production as variable cost is cost in processing of Feed.

year	Cost of Investment	Cost of Production	Total Cost
1	-	12,000	12,000
2	311,650	669,337	980,987
3	-	869,533	869,533
4	-	953,225	953,225
5	-	1,077,082	1,077,082
	311,650	3,581,177	3,892,827

The Benefit of the project is the total revenue received from  
no of sale x price/unit

year	No: of Sale	Price/unit	Benefit T.R.
1	-	-	-
2	150,000	5.50	825,000
3	200,000	5.50	1,100,000
4	220,000	5.50	1,210,000
5	250,000	5.50	1,375,000
	820,000	-	4,510,000

(1) Financial analysis

1.1 Cash Flow Financial Benefit of project from 1<sup>st</sup> year to 5<sup>th</sup> year has the positive value show the project is viable and the Net Cash Flow of the project period is 785,160 baht. This project can be accepted.

1.2 Break Even analysis. The relation ship between cost and revenue which total cost equally to total revenue at the level of production at 235.28 MT in the third years of the project.

(2) Economic analysis is considered in NPW, IRR and B/C ratio.

When used the discounted rate 50% (IRR = 50% > interest Rate) the NPW is 81,122.05 and B/C ratio = 1.0786 nearly to 1. It mean when the Benefit is equally to cost or Benefit per unit of cost is nearly to 1. The Internal Rate of Return is a 50% > interest rate; the Net Present worth will be 81,122.05 baht on over the period of project so this project the Establishment of Feed Mill in THA CHANG Agricultural Cooperative is Feasible.

Chapter 2 : Background

2.1 Overall Situation

The THA CHANG AGRICULTURAL COOPERATIVE is located THA CHANG District, SINBURI Province in the central region of the country. About 1,115 hectares of the agricultural area is in irrigation area under The Northern part of Chao Praya Riverland consolidation Project. Main crop is paddy, also sugar cane is expected as the private sugar factory is now located near the district.

Crop Pattern and Total farm area.

- The total agricultural area of 22,548 rais (3,608.67 hectares) are in irrigation are 19,185 rais (3,069.6 hectares) and in non-irrigation area 539.07 hectares.

- Crops Pattern

1. Paddy 2,800 hectares

- First Crop start from September - December

- Second Crop start from June - August

2. Corn/Maize 16.48 hectares

3. Sasame 8.32 hectares

4. Sugar Cane 4.8 hectares

5. Nut, Bean 26.24 hectares

6. Garden Crop 759.52 hectares

Total farm area 3,608 hectares (22,548 rais)

- Area of Production and yield

There has no information of other crops been collected except paddy. Since 1982 The annual survey of paddy yield can be shown as follows.

	Paddy Areas	yields (MT)									
		1982		1983		1984		1985		1986	
		MT	MT/ht	MT	MT/ht	MT	MT/ht	MT	MT/ht	MT	MT/ht
Paddy-first Crop	1983.16	9280.6	3.31	9168.6	3.27	8128.8	2.9	6721.5	2.4	9035.6	3.23
secondsecond Crop	1983.16	9320.8	4.7	-	-	8626.7	4.35	-	-	9842.0	4.96
Total	1983.16	18601.4	9.4	9168.6	3.27	16748.5	8.44	6721.5	2.4	18877.6	9.52

Note Because of water shortage is always a serious problem of the farmers, the Royal Irrigation Department has provided water for second crop every alternate year.

Cost of Production and Net Income

The cooperative has 1,260 members. Data on cost of production and net income has been collected from by using questionnaire and interview with 26 members. The cost of production of paddy is around 4,682 Baht/hectar.

The average production is 3.23 MT/hectars and the price of paddy is 2,140 Baht/MT (The price determined by the scheme of the Production credit and Rice Marketing linkage project of cooperative movement in 1986) so after deducting the cost, the net income/hectar is about 2,230.20 Baht.

The average land holding/member is 10.27 rai(1.64 hectares) So the average net income is around 3,657.50 Baht per member/crop season.

### Cost of Marketing

According to the questionnaires, most of the member sold their Paddy to Cooperative or Trader or rice miller depending on the price of Paddy and their convenience. 70% of member told in the last 5 years they used to sell Paddy to the cooperative because of the better price but in some years sold to the rice miller because of the better service, they had no cost of marketing. <sup>but</sup> if they sold their Paddy to the cooperative they had to pay for the transporting cost 50 Baht/MT. The other reason is the rice miller/trader paid to them in cash, they wanted cash to pay to the transplantation and harvesting expense. (Collecting Paddy of this Cooperative Jointed with the PACF under the Productive credit and Rice marketing project of the Cooperative movement)

### Other Income Generating Activities

40% of Interviewed members no other income or activities.

50% of the members told that themself or others in family has income from other activities such as Labour wage in transplantation and harvesting, salary or wage from working in other places countries or other provinces. Total non agri:Income amount 6,000-30,000 Baht/year.

10% have a small shop which sold some necessary consumer goods or produce handicrafts.

The Cooperative with advice and promotion from CPD District officer try to encourage occupation such as poultry to the cooperative youth group and handicraft to the cooperative house wife group.

### Existing Co-operative Serving

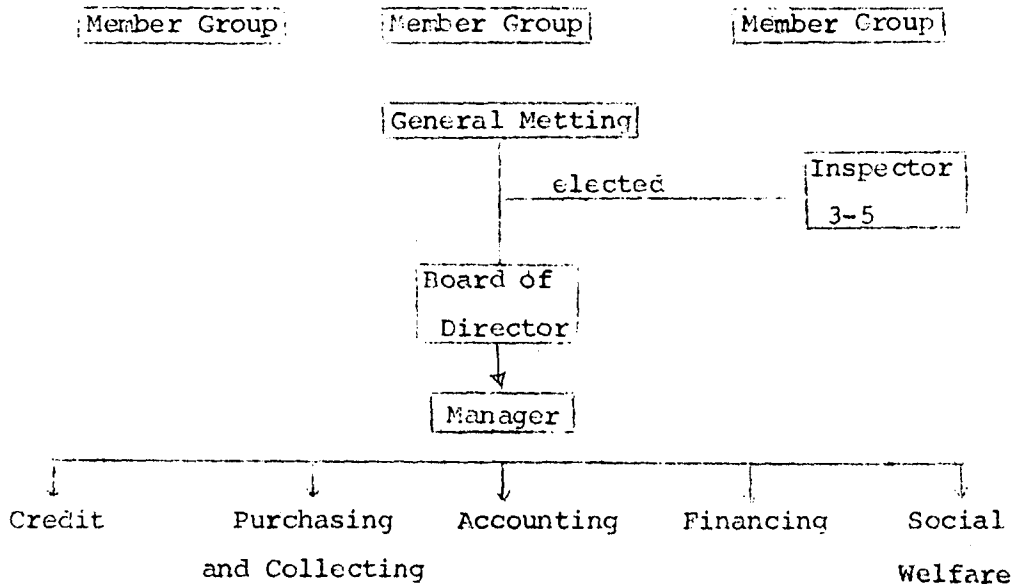
On 31 DEC. 1986. The total Agricultural populations is 27,704 persons or 1,747 households the farm household has been constantly in amount for 5 years. The ratio of membership per agricultural population (households) as.

Table 2 percentage of membership ratio.

particulars	1982	1983	1984	1985	1986
- Cooperative membership	1,257	1,289	1,290	1,284	1,237
Farm Household	1,747	1,747	1,747	1,747	1,747
Membership Ratio	17.95%	73.78%	73.84%	73.50%	70.81%

Chart Function, Activities, Performances and Management

member ( in villages )



Functions and Activities of this coop are as follows :

1. Giving credit (both in cash and in kind) to members for  
production and consumption. *(of Input)*
2. Receiving deposit from members.

3. assembling members produce or products for marketing.
4. supplying farm equipments, inputs and consumption goods.
5. managing the system of water distribution, water drainage.
6. promotion of thrift, self help and mutual help among members.
7. providing storage for agricultural produce and operate transportation facilities

performance and management started from Member Group will set the group meeting at least twice a year to discuss their problem in occupation and find the method to solved it and they will elect 1 chief and 1 secretary of Group as their representator in the annoul general meeting. This representator may be elected to Director in Board of Director of Cooperative which must manage all the affairs of cooperative including to consider the cooperative's plans and making the decision for the general manager to performance. The General Manager whom control 6 managing staff which consist of 4 section as Credit, Marketing, Accounting and Financing.

#### Organization and Institution

Chart of organization of TPA CHANG Agricultural Cooperative as above.

This cooperative was registrated on 23 August 1966 and merged with the other small cooperatives and was final registrated according to Cooperative Societyry Act 1968 on 1<sup>st</sup> of July 1975.

### System of Input Supply Credit

In the rural Social Structure, most of the farmer have being in the dominatory of the private trader under the patronage system which has been ongoing developed for long time. Trader will support the agricultural inputs as well as consumer goods to the farmers as loan and purchase the commodities from the farmer by deducting the loan with the rate of interest around 36-60% per year. The farmer received a few cash so when they begin the next cultivation they <sup>have to</sup> go to the trader again.

The THA CHANG Agricultural Cooperative has 2 term loans paid to member

1. Short Term Loan; The purpose of loan is for agricultural production 9, term of repayment 12 months or depend on the crop period; The security is 2 Guarantor or Joint Liability on Guarantee or Mortgage

2. Medium Term Loan; The purpose of loan are for land improvement, invest in agricultural Technology etc. term of contract is 3 years;

Maximum loan limit for member 80,000 Baht, the Total Loan payment as around 14,313,852 Baht on overage in Short Term Loan is 8,931 Baht/member and 21,552 Baht/member in Long Term Loan.

### Existing System of Disposal of produce by farmer

According to the intervies and Questionairs, the member will keep Paddy for next season cultivation seeding around 15-20 kg/rai or 100 kg/hectars and no keeping for Home consumption. They will purchase the rice for consumption month by month. All productivity of second crop are sold.



Table 3 Productivity, Home Consumption, Seed and Marketable Surplus.

Year	Productivity	Home Consumption	Seed	Marketable surplus
1982	9,280.6	-	200	9,080.6
1983	9,168.6	-	200	9,168.6
1984	8,121.8	-	200	8,121.8
1985	6,721.5	-	200	6,721.5
1986	9,035.6	-	200	8,835.6

## 2.2 Area of Project

In aim to study and improve the appropriate management in concept of integrated cooperative system. The mainly objective of the project is promote and expand the activity of the cooperative on processing activity in Feed Milling. The Feed Mill will use the by product of Paddy in term of value addition and increasing income of the farmers (in livestock extension)

The studying method and activities in the project

1. Identification and discussion with the Chairman of CLT about the idea objective and outline of the project.
2. Data and information collection.
3. Prove and Data analysis.
4. Drafting the result and evaluation.

Data and Information are collected by interviewing, questionair and collect from the documents and referance back.

## 2.3 Problems Faced by Farmers

### 1. Lack of land and Capital Investment

From questionnaires and visiting to members, 32% of members is under, rate of rent amount 300-500 Baht/rai/season (1,875-3,125 Baht/hectar/season some of them have to pay cash advanced but most pay one-third of yield,

The average area is 10.23 rai/family (1.64 hectar/family) According to the net income/hectar 2,230.20 bahts, so the total Net income from Paddy is 3,657.50 Baht or 7,315 Baht/year lower than the GNP/capital. It not enough

Loan payment of the cooperative show on Exhibit and average loan/member as follow

	1982	1983	1984	1985	1986
Loan /member	9,517	11,000	11,685	14,761	11,571

Office of Agricultural Economic, reported in 1985 that the farmers have to pay interest at the rate 5-10% a month or 60-120% a year to the Capitalist. Which is much higher than usual rate.

### 2. Crop price dropped, unreasonably and unfavourable price

	1982	1983	1984	1985	1986
Local market price	3,200	3,000	2,700	2,400	2,200

Table shows average subs price in the local market, from 1982-1986. The price was gradually decreased from 3,200 baht/MT in 1982 to 2,200 baht/MT in 1986. While the price of all input

factors are still unchanged or a little but decreased such as Fertilizer, insecticide, Pesticide etc, and this made farmer's income dropped while cost is constant.

### 3. Destructive insect and plant disease

The report of THA CHANG District Agricultural Extension office shows about destruction of insects and plant disease as follow

	1982	1983	1984	1985	1986
Destructive are	288	278	532	105	- NA

32% of Member answer the questionnaires that some of Paddy was destroyed by insect and plant disease

### 2.4 Need and Justification for the project

1. THA CHANG Agricultural Cooperative LTD has given their service to members in credit and input supply as the main business, while other business which can increase member's income still uneffective such as Agricultural extension or farm guidance and marketing of member's product. Due to the collection of paddy from members and send to PACF for Milling is varied and depend upon capital, method, price and other conditions which is controled by Productive Credit and Rice Marketing Linkage Project so, the volume of this business has fructuated and weaked. There are not the protential enough to solve the problems of the member. It is necessary for the Co-op to have some active has to help their members to find a new way to increase their income on better life by using modern technology Integrate system

2. Members of this coop-as well as other neighboring Cooperative, increase their income by doing animal husbandry such as swine, and they have to purchase animal feed from Bangkok or local agency and the price of Feed is fructuded and inverse varied on the price of meat. The farmers have usually losged. So the Co-op should take the probability settle up the Feed Mill to serve this problems by using the local resaurces as Feed stuff.

3. Crop price has tendency to drop depend on increasing of world productivity and trading profection thai government policy try to implement project of increase husbandry and Agro industry so that Co-op should to find the possibility of in the some *depecration*.

Chapter 3 Project

3.1 Objective

1. to promote and expand the activity of the cooperative to processing activity in Feed Milling and linkage with other business and the neighboring cooperatives.
2. to promote the Animal husbandry to the members in addition of Paddy which has surplus in supply and unfavourable price, by reducing the cost of Feed.
3. to better using and add the value of By product as Bran and Broken which are the by product of Paddy collected from the members.
4. In the long term, to promote the forage crop which use as Feed stuff especially maize, soybean.

### 3.2 Area of operation

The project operation coverage an

1. The target group of the project are the members of the cooperative where willing to raising the Animal and joint the project which the estimated target group is 200 members. The average pigs or cattle is 10 animal/family.

2. The project area is covered the operation area of the cooperative which is vove the THA CHANG District.

### 3.3 Project Component:

To achieve the objectives, this project consists of

3.3.1 Lovestock introduction and extension plan.

3.3.2 Procurement of raw material.

3.3.3 Processing - establishment of feed mill,  
- technical and processing step.

3.3.4 Marketing of completed feed.

#### 1. Preparation Step:

1.1. Make the discussion in the meeting of Board of Directors, clearing the background, strengths and weaknesses to find the resolution of meeting,

2. send the processing staff to training course on feed.

3. set up the meeting with other neighbouring agricultural coops to joint working in feed marketing and livestock extension plans.

4. explain clearly about the background and utility of the project and persuade the member to additional share holding in the general meeting,

5. provide the feed mill settled place.

#### 2. Operation Step:

1. Livestock introduction and extension plan in linkage with credit business, survey and organise the livestock farmer group and procure funds for them from the existing borrowing limit in BAAC, then payment in kinds of goods (feed, medicine etc.) and services.

2.2 Coordinate with the district officer of Livestock Development Department in farm guidance and extension.

(3) Processing Operation

3.1 establish the Feed Mill improve land and construct the Mill; setting the machine, equipment and joint using facilities such as warehouse, drying field.

3.2 Procurement of Raw Material (Feed stuff): using the by product and local commodities; In long term plan providing to extent the Forage Crops.

(4) Marketing of Feed in aspect of Marketing Mix

4.1 Product : diversify to Feed Formulas

- packing in such contained

4.2 place : distribute to activities group cooperative's wife group and youth group joint in marketing and extension plan with neighboring Agricultural Cooperative.

4.3 Price : The price fixation of feed

4.4 Promotion in farm guidance and extension activity with coordinate and cooperate of district officer of livestock development department. The other promotion channel.

(5) Working Capital Requirement

- Additional share holding
- Barrowing from financial resources

(6) Technical Analysis

- capacity, size and specification of machine and equipment.
- Cost of investment in machine and building.



(6) Organization and Management

- Processing sector
- employment and salary

(7) Profitability of the project

1. financial Analysis

- Cost of Investment
- Cost of Production
- Total cost of Project
- Benefit
- Cash Flow
- Payback period
- B.F.P.

2. Economic Analysis

- NPV
- IRR
- B/C ratio

(8) Recommendation

Chapter 4 Details of Operation

The Establishment of Feed Mill project for Livestock Extension  
in THA CHANG AGRICULTURAL COOPERATIVE LTD.

In order to increasing the effectiveness operation of THA CHANG Agricultural Cooperative LTD. to achieve the objectives of cooperative : so the cooperative have set up a project to establish /to Feed Mill for extent the occupation of the members the objective of project are

1. to promote the husbandry to the members in addition of Paddy which has uncertainly and unfavourable price then it will decrease risk in Agricultural Income
2. to reduce the cost of Feed by processing by-product of Paddy which collected from the members.
3. to promote the forage crops which used as Raw Material or Feed Stuff such as maize, Soy bean, Peanut, casava, and the cooperative will have the Raw Material resource in the local area
4. to promote and expand the cooperative activities in Guidance, marketing and processing and linkage to all business and with the neighboring cooperative

Operation stage of Project

1. Preparation stage/Providence stage

1.1 Preparing the Plan and details, meeting discusse and Training  
- set up the Meeting of Board of Director to consider and discuss in Project and its details especially share additional plan, Investment and Loan, Live stock Introduction and Extension plan, Raw materaial procurement plan Details of technical, Training programes up to Feed processing and marketing

Members of Board should discuss the strenght and weakness of project and find out the appropriate management.

- When the resolution of the meeting is accepted the project set the member group meeting to make discussion and cleary background of the project, and prepare the budget, Investment cost, revenue and expenditure monitoring to the General Meeting

### 1.2 Man power providence

- Explanation to Managing Staff about Linkage between processing with other sectors such as Credit, Purchasing, Marketing, Accounting sector in management of Plant, Cost Accounting, Marketing of Feed Mill and member's occupation Extension Plan.

- sending the processing staff to training in machinery maintainance, Feeding and management, Feed Formula, Blending Technic, Nutrition ratio, Nutrition requirement, Hygienic management, Prevention to epidemics, and vaccination in Training Course at National Swine Raising Reserch and Training Center, Kasetsart University.

### 1.3 Place providence

- providing the suitable location for plant and facilities in relation to other business such as warehouse, Drying Field, go down road, loading machine which jointused with other sectors.

### 1.4 Capital Providence

- Meeting and explain about the objective, operation, method, management, cost and benefit expected from project and li estock extension plan to the member in the group meeting for all members have participat with the project and then persuade all members to hold the additional share capital

- Explain to persuade joint working in livestock

Extension plan and linkage to the neighboring cooperatives in marketing, supplying Feed and guidance to each members (in 4 Agricultural coops. and 1 provincial swine raising co-op.)

## 2. Project Operation

The achievement of the project will strenghten and **expand** the activities in processing and marketing which on link with other business in addition to joint with Production Credit and Rice Marketing Linkage project.

### 2.1 Extension Plan

Set up the livestock Introduction and Extension plan based on the effort of loan pay to the member as the main inducement

2,1,1 survey the members who raise the animal and the member who has intention to joint with this project ; organize the livestock farmer group.

2.1.2 survey the demand of animals, types, varieties Feed and Fund , draffing Production plan of members and give the loan pay in kind of in puts from maximum loan limit for each members.

2.1.3 The livestock introducing Fund for members in the project can procure it from Annoul Barrawing limit at DAAC

2,1.4 **contract** with Swine Raising Reserch and Training Center, Kasetsart University for procurement of breeding and set Training course for farm management, technics, appropriate feeding and standard, Feeding Time Table, Hygienic management vaccination and for the member of livestock farmer group.

2.1.5 Coordinate with the District officer of Department of livestock Development to visiting and guidance to the member.

2.1.6 Coordinate and cooperate in strenthen and expand the market share of Feed and the bargaining Power in Meat market.

## 2.2 Procurement of Feed Stuff

According to compound feed has a lot of fomulars depend on qualification and need of animal such as sex, varieties, stress of animal. Temperature, Quality of Protein in Raw Material and Environmental Temperature. So, procurement of Feed stuff should consider to

1. should be the commodity which produce in local area
2. Or should be the by product of Commodities from primary processing in cooperative movement as Broken Rice, Bran
3. easily to procure or delivery
4. may be the raw material which can promote to produced by the member in the next in stead of Paddy second crop.
5. may be can procure from the movement.

From assumption above because of many kinds and types of Feed formular. Chosen for Example calculating of variable Cost in this project will use Feed Formular for the growing Pig which has weight amount 60-100 kg. Feed Formular, price of Raw materials and sources

Table 4 Feed Formular for Crowing Pig. (60-100 kg)

Raw Material	amount	Price/kg	Cost	
1. Broken Rice	52	3.80	197.60	- PACF
2. Bran	40	2.90	116.00	- PACF
3. Soybean Meal (Solvent extracted)	2.5	6.80	17.00	- Bangkok, chacho ng Soa, Prathum Thani,
4. Fish Meal	3	11.00	33.00	Bangkok other nearly Province
5. Di Calcium Phosphate	1.1	5.00	5.50	Company in Bangkok
6. Oyster Shell	0.8	0.90	0.72	Company in Bangkok
7. Salt	0.35	1.50	0.53	Local Market
8. Premix	0.25	80.00	20	Company in Bangkok
	100		390.35	

### 2.3 Processing

Processing activities will started in the early second year after explained and surveyed the Feed Demand and importantly, when the cooperative receipt the additional share capital from the member 311,650 Baht

#### Capacity of Feed Mill

Depend on Demand of Feed which vary to amounts of animal and raising method.

Animal	THA CHANG Dist.	Expected Demand of Feed
- Cattle	1,632	- NA -
- Pig	1,706	511.8 MT
- poultry	10,536	40 MT
- Fish	140,000	- NA -

The existing method of raising. Free raising is general method the farmer find the wasted food, the trunk of banana to mix it with bran for pig, and find straw, dry glass for feed of cattle. The reason is reducing the cost but not considerate to Feeding standard and growth rate. So calculating of Demand of Feed by using Feed conversion ratio is impossible.

The capacity of Feed Mill Plant vary to ability of cooperative to share market volume from traders. The volume of Feed market in THA CRANG District amount 300 MT/year from estimation of District officer of Department of Taxation.

So the estimated capacity of Feed mill around 300-800 MT/year

#### 2.4 Type and capacity of machines

1. Feed Mixer, vertical type; working by 2 ply axis, capacity 1,000 kg/time working time 20 - 25 minutes the disadvantage of its is have to dicuted the liquid raw material to scattering covery.
2. Grinder ; Hammer Mill type capacity 3,000 kg/hr. for grinding large size raw material such as Maize, Casava Chip working by a set of screw propeller and seive.
3. Feed Mixer ; Horizontal type capacity 100 kg/hr for compounding premix and concentrated protien ; working by Ribbon ply axis
4. Pelleting Machine ; Hart type Capacity 500 kg/hr work by 2 pellet Roller 2 unit it not available for mash Feed processing.

Specification of Feed Mill Plants

Capacity of Milling 5 MT/day

Area

- for Godown                    125 m<sup>2</sup>
- for Machinery                75 m<sup>2</sup>

Size, Type

No.

1. Feed Mixer
  - Vertical Type            1,000 kg/time            1
  - Horizontal Type        100 kg/hr                1
2. Hammer Mill Type Grinder    3,000 kg/hr            1
3. Hard Type Pelleting Machine    kg/hr                    1
4. Sack Packing Machine    1

Map of Plant Location on chart 4

In Long Term plan, the Co-operative should have a promotion project for Raw Material Crops such as Maize, Casava, Luceana, Sorghum especially Soybean and Peanut as the second Crop in place of Paddy which has fluctuate in its price.

For the processing plant the construction will be started by the early of second year and will finished in 2 months.

Transportation 1 small tricycle for distribution and 1 medium size truck (8 tons) for marketing use.

2.5 Marketing of Completed Feed

Big Competition is the importance factor for providing the marketing strategic. How to do in marketing, the cooperative should draft the Marketing Plan by consider in aspect of Marketing Mix.



## 2.6 Distribution Channel

The completed Feed will be sold to 3 distribution channels as follows

2.6.1 Direct supply to the target group (200 members) and other members through the Livestock Introduction and Extension Plan which works hand in hand with the district officer of Livestock Extension Department

2.6.2 Linkage with other neighboring Agricultural Cooperatives by making contracts to supply Feed to them as Agency

2.6.3 Linkage this business with Provincial Swine Raising Cooperative and Provincial Agricultural Cooperative Federation (PACF)

## 2.7 Demand of Feed

### 2.7.1 Existing Demand of Feed

From surveying, the existing demand of Pig Feed in THACHANG District is amount 300 MT/year. This demand is fructuated by depending on the quatity and price of pig. The farmers get risk, from the unstable and unreasonable price of pig. So most of farmer who has small farm raise their pig by self-sufficing Feed and purchased feed is only 25 - 30 % of total feeding. In case of Cattle Feed, all farmer raise the beef cattle by free raising in the grass feild or harvested paddy feild. No existing Demand of Cattle Feed

### 2.7.2 Calculation of Demand of Feed

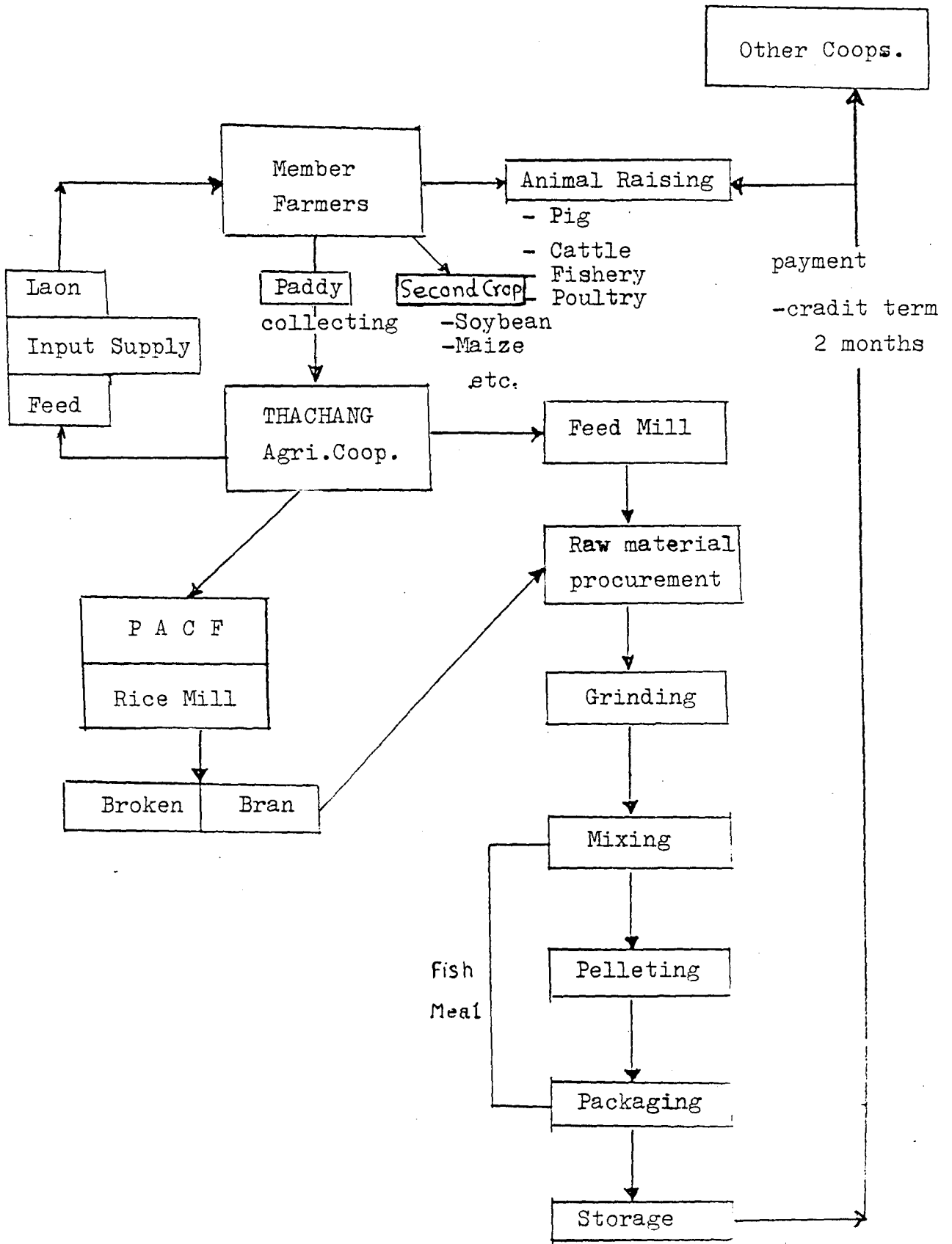
Actually, the farmer will give feed for pig in the increasing growth stage for fattening their pigs from 60 kg to 100 kg

The demand of pig feed can be calculated by the following formula

$$\begin{aligned}
 \text{Demand of pig Feed} &= \text{No. of Target members} \times \text{No. of Pigs} \times 2 \text{ time/year} \\
 &\quad \times \text{Feed conversion Ratio (at 40 kg of pig)} \\
 &= 100 \times 10 \times 2 \times (3 \times 40) \\
 &= 240 \text{ m MT/year}
 \end{aligned}$$

Assumption 75 % of demand of pig feed will be processed by Feed Mill in the first year

Chart 5 Processing stage and Marketing channel



## 2.8 Working Capital

### 2.8.1 Procurement of raw material

Mainly Raw material are Broken and Bran which the Cooperative can procure from the Rice mill of PACF which has milling period in 9 months a year, or the other sources, procure from the 6 private Rice mills nearby the Cooperative. Transport Cost is response of the saler. Other Raw materials have been sold in the completative market and its are easily to procure.

#### Cost in Stocking of Raw material

Most of Raw material are thr perishable products such as Bran, Fish meal, Soy bean meal etc. So the Cooperative couldn't keep its in long time. The Cooperative can send the order to the retialer or company and can receive the Raw materials in 1 week.

#### Cost of Handling

The project has already designed the scale of Feed plant for handling of completed Feed and raw materials. the interest of capital invested in the project calculated is showed on Table 5

### 2.8.2 Working Capital require

Working Capital requirement of Feed mill is separated to

1. Capital for Investment Cost
2. Capital for Operation Cost

1. Capital for Investment Cost from additional Share holding by members. The Cooperative will set up the plan for persuade and motivate the member participation by holding the additional share on average 250 baht/member which will have the Total Share Capital for Investment Cost 311,650 Baht.

2. Capital for Operation Cost from barrowing.the operation of Feed mill will start at the second year of the project.During the first year,the Cooperative will submit the report to the Cooperative Promotion Department (CPD) for borrowing Loan from Agriculture Reserve Fund of Ministry of Agriculture and Cooperative. The Laon requirement in this borrowing plan is 200,000 Baht.The interest of Loan from the CPD 6 % per year.

1. Product

Feed producing have to consider to the nutritive conditions for animals which vary to Age, Sex, Temperature, varieties, Protein quantity of Raw Materials etc. Feed Formula should be blended by following the member's demand and technical such as Feeding standard Nutrient requirement, Feed stuff as well as Cost of product :

Packaging of Feed in the project has fixed size of packing at 30 kg/sack. The Cooperative can diversify size of packing depend on amount of animals/member member's intention and cost of packing

2. Price Assumption for Price fixation

1. Cheaper or at least equally to market price.

2. Less than cost of animals weight conversion rate, price fixation should consider to competitive situation cost of Feed stuff, marketing and extension strategics. In the project, fixed the price of Feed at 5.5 Baht compare with 6.20 Baht of Trader's Feed.

3. Place

- Distribute Feed to the Problem Solving Activities of member group and also to member's wife group, youth group and small co-operative shop in the villages.

- Should have the Horizontal Intigrated with other district Agricultural Co-operative in marketing.

4. Promotion promoted Feed Meal by linkage with loan

payment and farm guidance in livestock. Extension plan, other sale promotion channel can present on the animal show. (This cooperative had the cattle' show last year (1986)).

## 2.6 Working Capital Requirement

Working capital requirement of Feed Mill is divided to 2 parts

1. Capital for Investment Cost from additional share holding by members.

2. Capital for operation cost from borrowing.

### 1. Additional share capital

80% of director answered the questionair that it possible to the member to hold the additional share capital, if the cooperative has requested

Increasing rate of share capital holded by member is 7%/year or amounts 300,000 Baht/year. Cooperative should explain the Benefit, Investment cost and other activities to clearly and survey the willing and voluntary of the members to hold the additional share capital.

The working capital requirement from additional share holding of the member is totally 311,650 Baht overage 250 Baht/member

2. Loan from CPD for operation cost such as cost of raw materials, operation expenditure. Cooperative should report the project to CPD. The operation cost can be turnover 2 round in a year at least, so the loan requirement for the operation cost is amount 300,000 Baht.

Table 5 Financial Sources, Working Capital requirement and term of Investment.

Financial Resource	Working Capital (Baht)	Term of Investment
1. Receipt share capital from the members.	311,650	- during the 1 <sup>st</sup> year in preparation Step.
2. Loan from CPD for Operation cost.	300,000	- Processing step in early the second year.
Total	611,650	



TABLE 5 WORKING CAPITAL REQUIREMENT

Particular	1 <sup>st</sup> Year		2 <sup>nd</sup> Year		3 <sup>rd</sup> Year		4 <sup>th</sup> Year		5 <sup>th</sup> year	
	Monthly	Yearly	Monthly	Yearly	Monthly	Yearly	Monthly	Yearly	Monthly	Yearly
1. Raw material Purchase										
- Broken	-	-	29,640	296,400	32,934	395,200	36,227	434,720	41,166	494,000
- Bran	-	-	17,400	174,000	19,333	323,000	21,266	255,200	24,166.3	290,000
- Soy Bean meal	-	-	2,550	25,500	2,833	34,000	3,117	37,400	3,541.6	42,500
- Fish meal	-	-	4,950	49,500	5,500	66,000	6,050	72,600	6,874.7	82,500
- Oyster shell	-	-	108	1,080	120	1,440	132	1,584	150	1,800
- Dicalcium phosphate	-	-	825	8,250	917	11,000	1,008	12,100	1,145.8	13,750
- Salt	-	-	78.75	795	87.5	1,060	96.25	1,166	109.5	1,325
- Premix	-	-	3,000	30,000	3,333.5	40,000	3,666.6	44,000	4,166.5	50,000
2. Transportation cost	-	-	450	5,400	500	6,000	550	6,600	625	7,500
3. Salary & Wage	2,000	12,000	5,260	63,120	5,510	66,120	5,810	69,720	6,120	73,440
4. Repair & Maintenance	-	-	208.35	2,500	208.3	2,500	208.3	2,500	208.3	2,500
5. Energy charge	-	-	66	792	73.3	880	80.67	968	91.67	1,100
6. Interest	-	-	1,000	12,000	750	9,000	500	6,000	250	3,000
7. Miscellaneous	1,000	12,000	100	1,200	650	7,800	1,000	12,000	1,250	15,000
8. Total Expense	3,000	24,000	82,949	995,387	72,749.5	886,333	79,711.9	971,225	89,866	1,095,082
9. Total revenue	-	-	68,750	825,000	91,666.3	1,100,000	109,833.1	1,210,000	114,583	1,375,000
10. Deficit (-) & Surplus (+)	-3,000	-24,000	-14,199	-170,387	18,917	213,667	21,121	238,775	24,717	279,918
!! Accumulative: Deficit (-) & Surplus	-3,000	-24,000	-17,199	-194,387	1,718	19,280	22,839	258,055	47,556	537,973

Chapter 5    Organization and Management

Processing is one of the objectives in the by-law of the cooperative, but no directly business in the existing activity. Processing of Paddy has done by PACF.

To achieve objective. THE CHAND Agri. Coop should settle up a new sector as processing sector and appoint or employ staffs who would have the authorize and fully responsibility on the functions and activities as follow.

1. manage and control the milling in efficiency and effectiveness on the standard of Feed and control cost and quality of output.

2. Cooperate and Coordinate with credit sector staff and officer of            Department of Livestock Development in Farm guidance and livestock extension plan.

3. Survey and collect the data and information of production and marketing here adjust and apply to strenghtening cooperative in distribute Feed and procure the Feed stuff.

4. Control the minimize cost of production and promote the members to produce on growing the forage crops such as Soybean peanut, Maize, casava in stead of Paddy in second crop and collect its from the members.

Chief of Processing section should employ after the project was accepted by the resolution of the board. The cooperative should sent him to the training course on all Feeding technical operation and management

The Qualification required for chief of Processing sector position as follow

Cooperative have to employ 2 labour workers in Feed mill plant.

The salary and wages for processing staff on Table 6

Qualification requirement for Chief of Processing Sector position

1. Certificated in Animal Husbandry from Agricultural collage.
2. Male, age not more than 30 years and exempted from Military service.
3. Have on experience in Husbandry or Feed Milling for at least 3 years.
4. Good honour and good character can joint working with the team.
5. To Farm guidance and willing to work and stay in the fields.

Table 6 Direct Labour Salary/wages

Year	Chief of Processing Sector	Workers		Total	Note
		1	2		
1	12,000	-	-	12,000	- about 6 months
2	25,560	18,780	18,780	63,120	
3	26,760	19,680	19,680	66,120	
4	28,320	20,700	20,700	69,720	
5	29,880	21,780	21,780	73,440	
				284,400	

Chart 2 Designed Organization of THA CHAND Agri. Co-op.

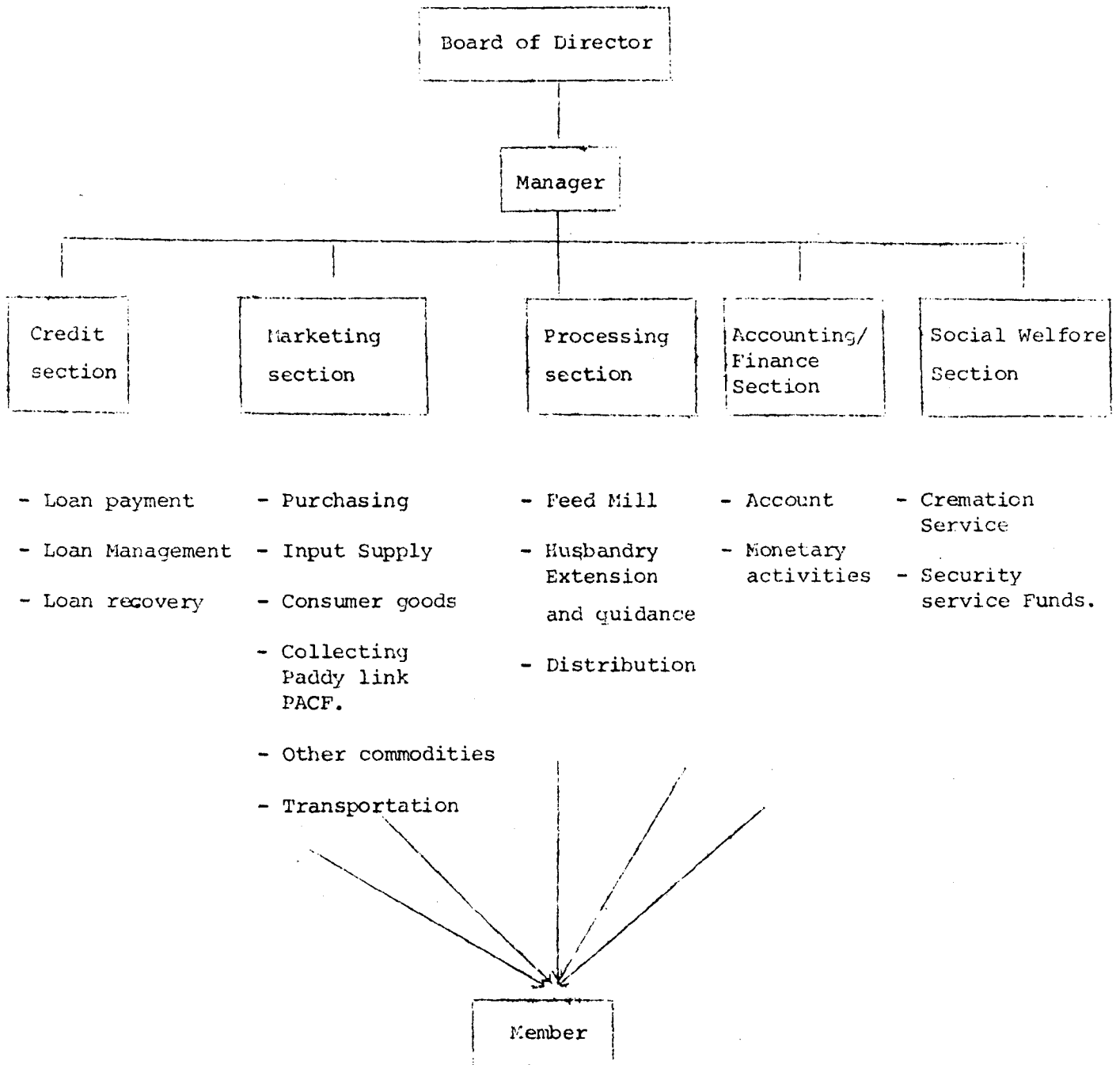
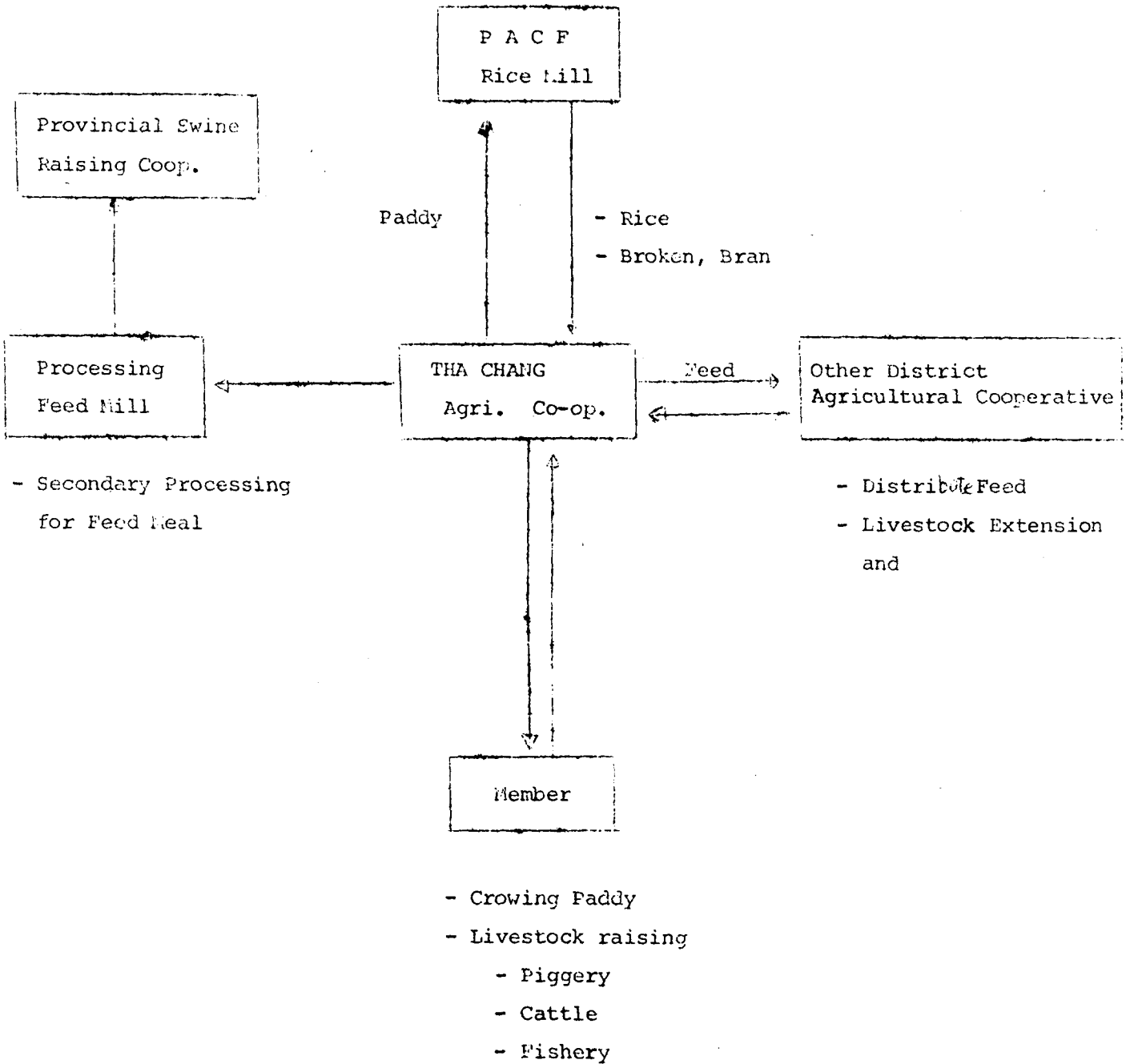


Chart 3 The Linkage activities of THA CHANG Agricultural Cooperative



The Financial analysis of the project should consider all of these following factor.

1. Capital Cost or Cost of Investment

It is the cost invested in some assets such as Building Machine and equipments Land including improvement Cost which will be invested in early of 2<sup>nd</sup> year. The detail in investment is shown on exhibit 4

Table 7 Cost of investment

Year	Land	Building	Machine	Equipment	Total (Baht)
1	-	-	-	-	-
2	40,000	120,000	142,150	9,500	311,650
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
	40,000	120,000	142,150	9,500	311,650

2. Variable Cost (Cost of Production)

It is cost of processing such as Raw Material, Transportation Cost, Direct Labour, Packing, Electric charge and Maintenance. This cost tends to vary in proportion to the variations in volume of processing.

Table 8 Variable Cost or Cost of Production

Year	Raw Material Cost	Transport Cost	Packing Cost	Electric Cost	Other Maintenance	Direct Labour	Total Variable Cost
1	-	-	-	-	-	12000	12000
2	585525	5400	12000	792	2500	63120	669337
3	780700	6000	13333	880	2500	66120	869533
4	858770	6600	14667	968	2500	63720	953225
5	975875	7500	16667	1100	2500	73440	1077082

- Raw Material Cost is calculated from Feed Formular for growing pig

Exhibit 4

- Transport Cost estimated oil expense of small Tricycle for sending Feed to serve the members and delivery of Paw Materials.
- Packing Cost calculated by cost of paperbags contained Feed Meal average 2.5 Baht/unit
- Electric Charge - 4.40 Baht/MT
- Direct Labour - show on Table 6
- Maintainance - Machine repair. estimate in a year

Total Project Cost

is the total cost in operating the project which consist of

- Fixed Cost or Cost of Investment
- Variable Cost or Cost of Production

Table 9 Total Project Cost

Year	F.C (cost of investment)	V.C (cost of Production)	T.C (Total Cost)
1	-	12,000	12,000
2	311,650	669,337	980,987
3	-	869,533	869,533
4	-	953,225	953,225
5	-	1,077,082	1,077,082
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-
	311,650	3,581,177	3,892,827

3. Benefit

Benefit of the project receive from selling Feed to member or non member and other cooperative.

Benefit calculation from no. of Sale x Price/unit is shown on Table 10

Table 10 Benefit or Revenue of the project

Year	No. of Feed Meal (kg)	Price/kg	Total Revenue
1	-	-	-
2	180,000	5.50	825,000
3	200,000	5.50	1,100,000
4	220,000	5.50	1,210,000
5	250,000	5.50	1,375,000
			4,510,000

Note

Assumption

--~~Price~~ should be cheaper or at least equal to Commercial price (local trader price)

- The elastic of product  $< 1$



Profitability of the project

The Following aspects should be taken into account.

1. Financial Analysis
2. Economic Analysis

1. Financial Analysis

1.1 Cash Flow

The Financial result of the project can be considered from the 1<sup>st</sup>-10 year cash flow. The project should be accepted when cash flow is positive

The result of Financial analysis shown the net cash flow for the whole period if the project is 785,160 Baht.

This project should be invested

Note - According to tax law, a cooperative has not to pay corporation income tax.

1.2 Cash Inflow of the project

Table 11 = Total Revenue - Operating Cost.

Year	Total Revenue	Operating Cost	Cash Flow (Inflow)	Accumulated Net Cash Flow
1	-	12,000	- 12,000	- 12,000
2	825,000	669,337	155,663	143,663
3	1,100,000	869,533	230,467	374,130
4	1,210,000	953,225	256,775	630,905
5	1,375,000	1,077,082	297,918	928,823
	4,510,000	3,581,177	928,823	

### 1.3 Payback Period

From Table above Compared with the Investment Cost  
the  
Payback Period = 3 years

The Cooperative needs has 3 years to cover the initial investment

### 1.4 Break even point analysis

Because of Feed Formular depend upon many factors

in this report, only one type is choosen as classify

on Table 4

#### Salution

The capacity of Feed Mill	5	MT/day
Working days	200	days/year
Total productivity $5 \times 200$	= 1,000	MT/years
Price of Feed	5.50	Baht/kg

Total Revenue/year = 1,000 MT/year x (5.5 x 1,000) Baht/MT  
= 5,500,000 Baht

#### Find Total Cost/year

##### 1. Total Fixed Cost/year

##### 1.1 Production Cost consistèd of salary and wage of 3

processing staff (Table 6 )

1. Chief 2,130 B./month	=	25,560	Baht/year
2. Worker 1,565 B/month x 2 person	=	<u>37,560</u>	Baht/year
Total		<u>63,120</u>	Baht/year

##### 1.2 Interest of Loan

Investment Cost = 311,650 Baht from member's Share  
Capital (Table 5 )

The Dividend paid to the members for the last 5 years are 8%, 8%, 10%, 9% and 8% of (From Cooperative Annual Report) So, overage Dividend is 8.6% as Interest of Loan

$$\begin{aligned} \text{The Dividend of Investment/year} &= 311,050 \times \frac{8.6}{100} \\ &= 26,801.90 \text{ Baht} \end{aligned}$$

1.3 Depreciation (Exhibit 6)

$$\text{- Total Depreciation/year} = 20,215 \text{ Baht}$$

$$\begin{aligned} \text{Total Fixed Cost/year} &= 63,120 + 26,801.9 + 20,215 \\ &= 110,136.90 \end{aligned}$$

2. Variable Cost/year

2.1 Cost of Raw material (Feedstuff)

$$\begin{aligned} &= 390.35 \times 10 \times 1,000 \\ &= 3,903,500 \text{ Baht/year} \end{aligned}$$

2.2 Other variable Cost : Transportation Cost, packing Cost Electric charge, maintainance. The overage is 112.84 Baht/MT

$$\begin{aligned} \text{Other variable Cost} &= 112.84 \times 1,000 \\ &= 1,128,400 \text{ Baht/year} \end{aligned}$$

$$\begin{aligned} \text{Total Variable Cost} &= 3,903,500 + 1,128,400 \\ &= 5,031,900 \text{ Baht/year} \\ \text{A.V.C.} &= 5,031.9 \text{ Baht/MT/year} \\ \text{Total Cost (T.C.)} &= \text{T.F.C.} + \text{T.V.C.} \\ &= 110,136.90 + 5,031,900 \\ &= 5,142,036.90 \text{ Baht/year} \end{aligned}$$

$$\begin{aligned} \text{Profit} &= 5,500,000 - 5,142,036.90 \\ &= 357,963.10 \text{ Baht} \\ \text{M.E.P.} &= \frac{110,136.90}{5,500 - 5,031.90} \\ &= 235.28 \text{ MT} \end{aligned}$$

The Level of Production at 235.28 MT in the third year of the project

## 2. Economic Analysis

Method of evaluation is

### 2.1 Net present Worth (NPW)

is the discounted value of the retannual returns over the Total life of the project.

The formula for calculating is

$$\text{NPW} = \sum_{i=1}^n \frac{B_i - C_i}{(1 + r)^i}$$

where  $B_i$  = Benefit in each year  
 $C_i$  = Cost in each year  
 $n$  = Project period in years  
 $r$  = Discount rate

Use the Discount rate at 12% equally to the interest rate charged by the commercial Bank under the Notice of THAI BANK Association

### 2.2 Internal Rate of Return (IRR)

is rate of Discount factor which makes NPW equal to one the formula for calculating is

$$NPW = \sum_{t=1}^5 \frac{(B_t - C_t)}{(1 + IRR)^t} = 0$$

if  $IRR > r$  (Interest rate) the project is Acceptable to Invest

if  $IRR < r$  (Interest rate) the project should be rejected

2.3 Benefit - Cost Ratio (B/C)

the formula is  $\frac{B}{C} = \frac{\sum \text{Present Value of Benefit}}{\sum \text{Present Value of Cost}}$

if  $B/C > 1$  the project is Acceptable

According to the Benefit and Cost of the project in each year 1 - 5 on Exhibit 6, the analysis result are

1. When discount factor = 12% which is equal to Rate of Interest (IRR = r)

NPW = 360,684.47

B/C ratio = 1.1373

2. When Discount factor = 50% which more than the Rate of Interest / is (IRR > r)

NPW = 81,122.05

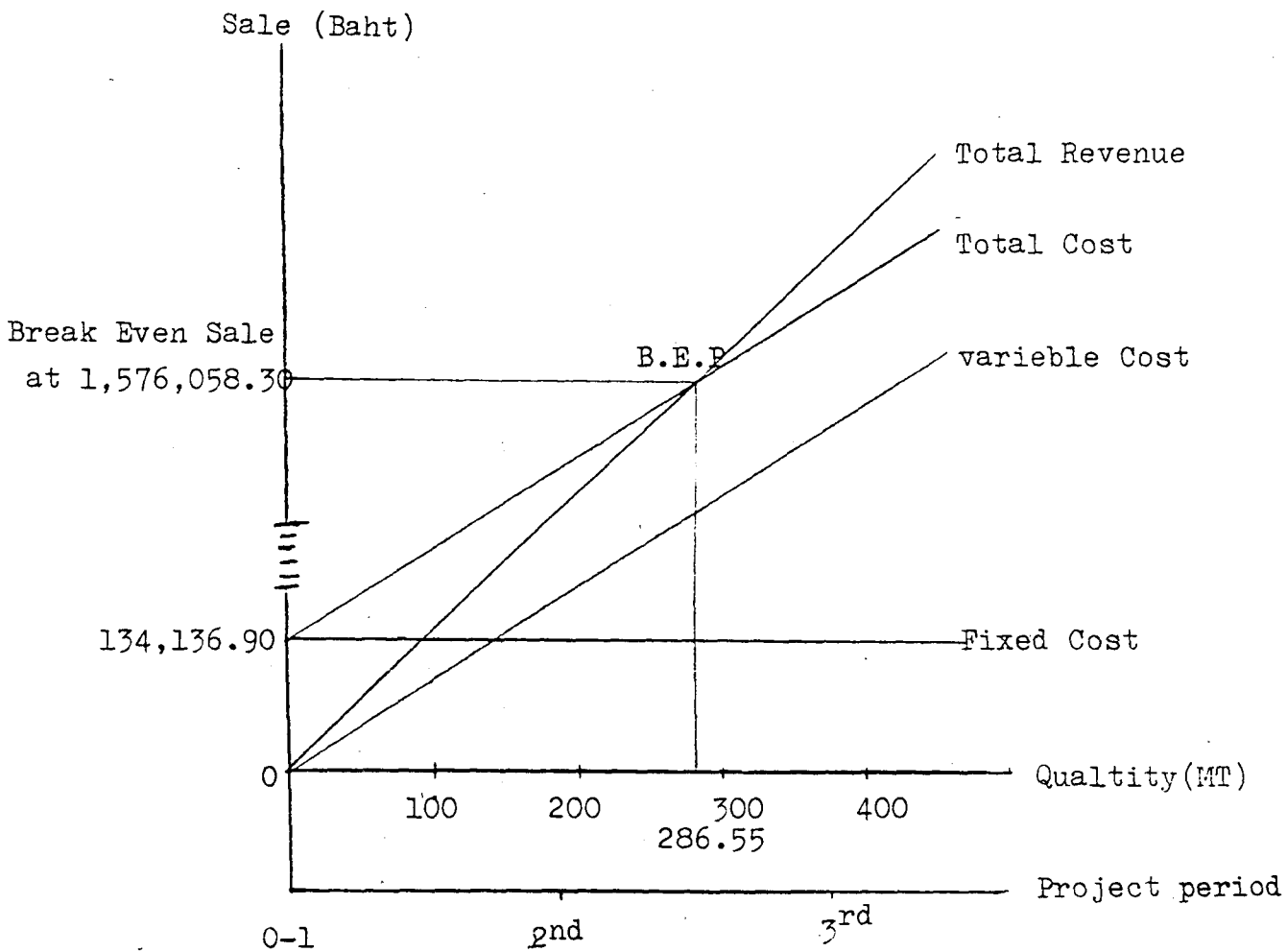
B/C ratio = 1.0786

Conclusion

when consider the financial analysis and the economic analysis in which the net cash flow = 785,160 baht. The internal rate-return (IRR) = 61.025 and B/C ratio = 1.1373

It can be concluded that the Establishment of Feed Mill in THA CHANG Agricultural Cooperative. Ltd. is feasible.

Chart 6 Break Even Point of the project



Break Even Point at 286.55 MT of Completed Feed in the 2<sup>nd</sup> year

- Fixed Cost = 134,136.90 Baht
- Variable Cost = 1,441,921.40 Baht
- Total sale = 1,576,058.30 Baht

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Exhibit 7 Economic Profitability of the project at Discount Rate 12 %

Year	Total Cost	Total Revenue	Discount Rate	N.P.V of Total Cost	N.P.V of Total Revenue	Net CastFlow	Net Cash Flow at Discount Rate
1	24,000	-	0.8929	21,429.6	-	-24,000	-21,429.60
2	995,387	825,000	0.7972	793,522.5	657,690	-170,387	-135,832.50
3	886,333	1,100,000	0.7118	630,891.8	782,980	213,667	152,088.20
4	971,225	1,210,000	0.6335	615,271.0	766,535	238,775	151,264.-
5	1,095,082	1,375,000	0.5674	621,349.5	780,175	279,918	158,825.50
	3,972,027	4,510,000		2,682,464.40	2,987,380	537,973	304,915.60

$$\text{Benefit/Cost ratio} = \frac{2,987,380}{2,682,464.40}$$

$$= 1.1137 > 1$$

Exhibit 8 Economic Profitability of the Project at Discount Rate 50%

Year	Total Cost	toatl Revenue	Discount Rate	Net Cash Flow	N.P.V of Total Cost	N.P.V of Total Revenue	Net Cash Flow at Discount Rate
1	24,000	-	0.667	-24,000	16,008	-	-16,008
2	995,387	825,000	0.448	-170,387	445,933.40	366,300	-79,633.40
3	886,333	1,100,000	0.296	213,667	262,354.56	325,300	62,945.44
4	971,225	1,210,000	0.198	238,775	192,302.55	239,580	47,277.45
5	1,095,082	1,375,000	0.132	279,918	144,550.82	181,500	36,949.18
	3,972,027	4,510,000		537,973	1,061,149.30	1,112,980	51,530.67

$$\text{Benefit/Cost ratio} = \frac{1,112,980}{1,061,149.30}$$

$$= 1.0488 > 1$$

$$\text{IRR} = 12\% + (50-12) \frac{304,915.60}{304,915.60 - 51,530.67}$$

$$= 57.728\%$$

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Production cycle of Feed processing

(calculatipn in the second year of the project)

Operation Stage	Monthly											
	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1. Procurement of Raw material (kg)												
- Broken	5,500	5,200	5,200	6,300	6,500	6,300	9,400	9,500	9,500	10,000	10,000	13,000
- Bran	4,200	4,000	4,000	4,800	5,000	5,000	7,000	7,000	7,500	8,000	8,000	10,000
- Soy Bean meal	350	250	250	300	300	300	450	450	450	500	500	500
- Fish meal	300	300	300	360	360	360	550	550	550	600	600	750
- Oyster shell	100	100m	100	100	100	100	100	150	150	150	200	200
- Dicalcium phosphate	150	120	120	150	150	150	150	200	200	200	200	300
- Salt	60	30	30	30	60	60	30	60	60	60	90	90
- Premix	30	25	25	30	30	30	45	50	50	50	50	50
2. Total cost of Raw material (Bath)	41,768	39,095	39,095	47,145	48,530	47,770	69,615	70,735	69,285	76,425	78,415	96,715
3. Processing (Bath)	39,035	39,035	39,035	46,845	46,840	46,840	70,262	70,262	70,262	78,069	78,069	97,586
4. Finished Feed (kg)	10,000	10,000	10,000	12,000	12,000	12,000	18,000	18,000	18,000	20,000	20,000	20,000
5. Sale (kg)	8,000	9,000	10,000	11,000	12,000	13,000	15,000	16,500	18,500	20,000	20,000	23,000
6. Stock of Raw material (bath)	2,733	2,794	2,854	3,158	4,847	5,775	5,128	5,602	4,624	2,980	3,326	2,455
7. Stock of Finished Feed (kg)	2,000	3,000	3,000	4,000	4,000	3,000	6,000	7,500	7,000	7,000	5,000	3,000

Recommendation

1. This project will increase more activities to serve the Members.

Task is the processing by make use of by product of Paddy with collected from the members and sent to the Rice Mill of PACF under the Productive Credit and Rice Marketing Linkage project. How to controll the quality of Feed on Feeding standard. Sub Task are how to guidance and expand the livestock raising or Fishery to members. How to share the market value because the important problem is the big competition, which will be happened. So the cooperative should be developing the product and strenghten the marketing on marketing Mix especially price policy, product development plan, distribution channed and packing, promotion in the extension plan.

2. Free raising and unsuitable Feeding

Cooperative should promote and extension the activity of the cooperative wife's groups and youth's groups because both of them may be the real raiser or at the best assistant so, set some of Training programe on livestock management to them. By this way, the relationship between the member of family will be wormly and comfortable it mean the social benefit in addition to increasing their income.

3. Working Capital Requirement

From the questionnaire and interviewing to the member of Board of Director, most of them believed that cooperative has potential get the additional share for investment of the project but they, reconized that the net income of the member was decreased by the low price of Paddy and not sure in next year it will be better or not. To solve the problem, the Cooperative should make ensure to implement the member's participation in holding the additional share or in distribution of annual Net profit for investment in stead of the dividant.

4. Marketing activity of the Project is the most important condition to achievement. Task in this case is Livestock Introduction and Extension activities, so that this plan should be potentially successful and strictly in activities, time and other details. The basic performance are (4.1) coordinating to the Government service such as Livestock Development Dept. (4.2) Linkage with Credit, Purchasing and Marketing Business (4.3) Horizontal Integration with Swine Raising Cooperative (provincial) and neighboring coop to joint working in Feed Marketing.

Exhibit 1 THA CHANG Agriculture Co-op. Ltd. The Financial Situation.

items	1982	1983	1984	1985	1986
1. Members	1,257	1,289	1,290	1,284	1,237
2. Member Groups	43	43	43	43	41
3. Share Capital	3,198,650	3,753,850	4,205,350	4,645,050	4,908,800
4. Reserve Fund	1,155,161	1,239,776	1,490,927	1,878,220	2,289,550
5. Other Fund	105,700	105,700	101,508	120,192	144,211
6. Member's Deposit	1,041,058	1,256,693	1,124,630	1,161,773	2,006,254
7. Employee's Reserve Fund	171,828	248,414	301,454	327,403	346,006
8. Barrowing					
- BAAC	11,248,069	12,834,199	11,320,299	9,674,988	8,305,429
- CPD	334,000	292,070	263,994	239,415	213,000
9. Loan - Short Term	3,435,700	5,581,829	5,044,656	6,015,052	4,661,299
- Medium Term	8,526,800	8,598,084	10,029,814	9,938,722	9,652,553
10. Loan payment during a year					
- Short Term	3,628,800	5,823,100	4,151,550	4,886,700	3,116,920
- Medium Term	6,887,000	5,391,000	5,571,000	4,549,500	4,353,600
11. Loan Recovery during a year					
- Short Term	3,794,400	3,676,911	4,683,783	3,916,304	4,470,196
- Medium Term	4,415,650	5,319,916	4,139,270	4,640,590	4,639,769
12. Current Assits	18,301,648	22,890,564	17,549,421	17,952,155.7	18666659.4
13. Current Liabilities	14,379,796	18,030,576	11,576,359	11,096712.2	11426091.7
14. Other Asset	1,287,095	1,346,175	1,285,024	1,244,833.6	1431315.80
15. Revenue - Credit	1,421,422	1,973,264	2,108,549	2,431,424	2,128,026
- Purchasing	1,851,348.1	1,594,348	1,877,090	1,415,988	1,139,834
- Collecting	3,300	516,390	1,071,128	17,673	-
16. Total Revenue	3,337,090.2	4332077.8	5245485.3	3984610.40	3618101.50

items	1982	1983	1984	1985	1986
17. Total Cost and Expenditure	3036481.5	3816724.8	4372692.30	3150972.90	2887935.80
18. Net Profit	300608.70	515353	672793	833737.46	730165.71
19. Overdue Interest	282420.90	430134.10	611136.70	801700	1038356.10
20. Working Capital	19588744	22890564.5	17549420.87	19196989.4	20097975.3
	4670120.15	5597679.8	6665577.8	7477199.33	8066877.40

## Exhibit 2 Chemical Components of Feedstuff and Price/kg

No.	Feedstuff	Price /kg	Chemical Component of Feed/kg							
			Protein	Energy Kcal/kg	Calcium	Phosphorus	Lysine	Methionine + cistine	Triptofen	Treonine
1	Corn/Maize	3.00	0.08	33.70	0.0001	0.001	0.0025	0.004	0.001	0.003
2	Soybean Meat (Salvent Extra)	6.80	0.44	22.80	0.0025	0.002	0.027	0.013	0.006	0.017
3	Fesh Meal	11.00	0.60	29.50	0.05	0.03	0.146	0.021	0.006	0.024
4	Bran	2.90	0.12	27.10	0.0006	0.0047	0.0053	0.005	0.001	0.004
5	Leucaena leaf Meal		0.20	9.0	0.0054	0.003	0.001	0.006	0.002	0.008
6	Broken Rice	3.80	0.08	35.69	0.0003	0.0004	0.0027	0.0032	0.001	0.0036
7	Casavachips	1.60	0.025	25.3	0.0012	0.0005	0.0009	0.0006	0.0002	0.0007
8	Coconut Meal	2.8	0.23	30.3	0.0006	0.004	0.006	0.005	0.0001	0.004
9	Peanut Meal (Salvent Extracted)	6.00	0.45	23.20	0.0030	0.002	0.027	0.013	0.006	0.017
10	Oyster Shell	0.90	-	-	0.38	-	-	-	-	-
11	Salt	1.50	-	-	-	-	-	-	-	-
12	Premier	20.00	-	-	-	NA-	-	-	-	-
13	Lysine	90.00	-	-	-	-	-	-	-	-
14	Dicalcium Phosphat	5.00	-	-	0.24	0.18	-	-	-	-

Note Price of Feedstuffs from the Trade Daily News. Ministry of  
Commerce.

Exhibit 3 calculation of Feed Formulatre

Feedstuff	kg/100kg	Cost	Price/kg
1. Poroken	52	197.60	3.80
2. Bran	40	116	2.90
3. Saybean meal Salvent extracted	2.5	17.0	6.80
4. Fish meal	3	33	11.00
5. Dicalcium Phosphate	1.1	5.50	5.00
6. Oyster shell	0.8	0.72	0.90
7. salt	0.35	0.53	1.50
8. Premix	0.25	20	80
	100	390.35	

Note

- Price of Feedstuff from the Daily Trade News
- Feed Formular is setted for growing pig (90-100 kg)

Exhibit 4 Cost of Raw material; calculated from Feed Formula for Growing Pig

	ថ្ងៃ 1	ថ្ងៃ 2	ថ្ងៃ 3	ថ្ងៃ 4	ថ្ងៃ 5
	-	150 MT	200 MT	220 MT	250 MT
1. Broken Rice	-	296,400	395,200	434,720	494,000
2. Bran	-	174,000	232,000	255,200	290,000
3. Soybean Meal (Sdv.Extracted)	-	25,500	34,000	37,400	42,500
4. Fish Meal	-	49,500	66,000	72,600	82,500
5. Dicalcium phosphate	-	8,250	11,000	12,100	13,750
6. Oyster Shell	-	1,080	1,440	1,584	1,800
7. Salt	-	795	1,060	1,166	1,325
8. Premix	-	30,000	40,000	44,000	50,000
<b>Total</b>		<b>585,525</b>	<b>780,700</b>	<b>858,770</b>	<b>975,875</b>



Exhibit 5 Detail in Investment of Project

items	Baht	Notice
1. Land 10 x 20 sq m	40,000	- property of Co-op but no used
2. Feed mill Plant		
2.1 Building	120,000	
2.2 Machine 5 MT/day		
- Feed Mixed. vertical type 1,000 kg/time	19,850	
- Feed Mixed; Horizontal Type 100 kg/hr	15,000	
- Grinder; Mincer Type 3,000 kg/hr	61,300	
- Pelleting Machine; Hard Type 500 kg/hr	28,000	
- Paching Machine	12,000	
3. Setting expenditure	6,000	
4. Electric equipments	9,500	
	311,650	

Exhibit 6 Depreciation of Asset calculated straight line approach.

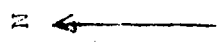
Year	Building	Machine	Total
1	-	-	-
2	6,000	14,215	20,215
3	6,000	14,215	20,215
4	6,000	14,215	20,215
5	6,000	14,215	20,215
	24,000	56,860	80,860

- Note
- Period of Depreciation from Co-op Audvting Department
  - Building 20 years = 5% Deducted/year
  - Machine 10 years = 10% Deducted/year

Map of Plant Location

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Irrigation canal



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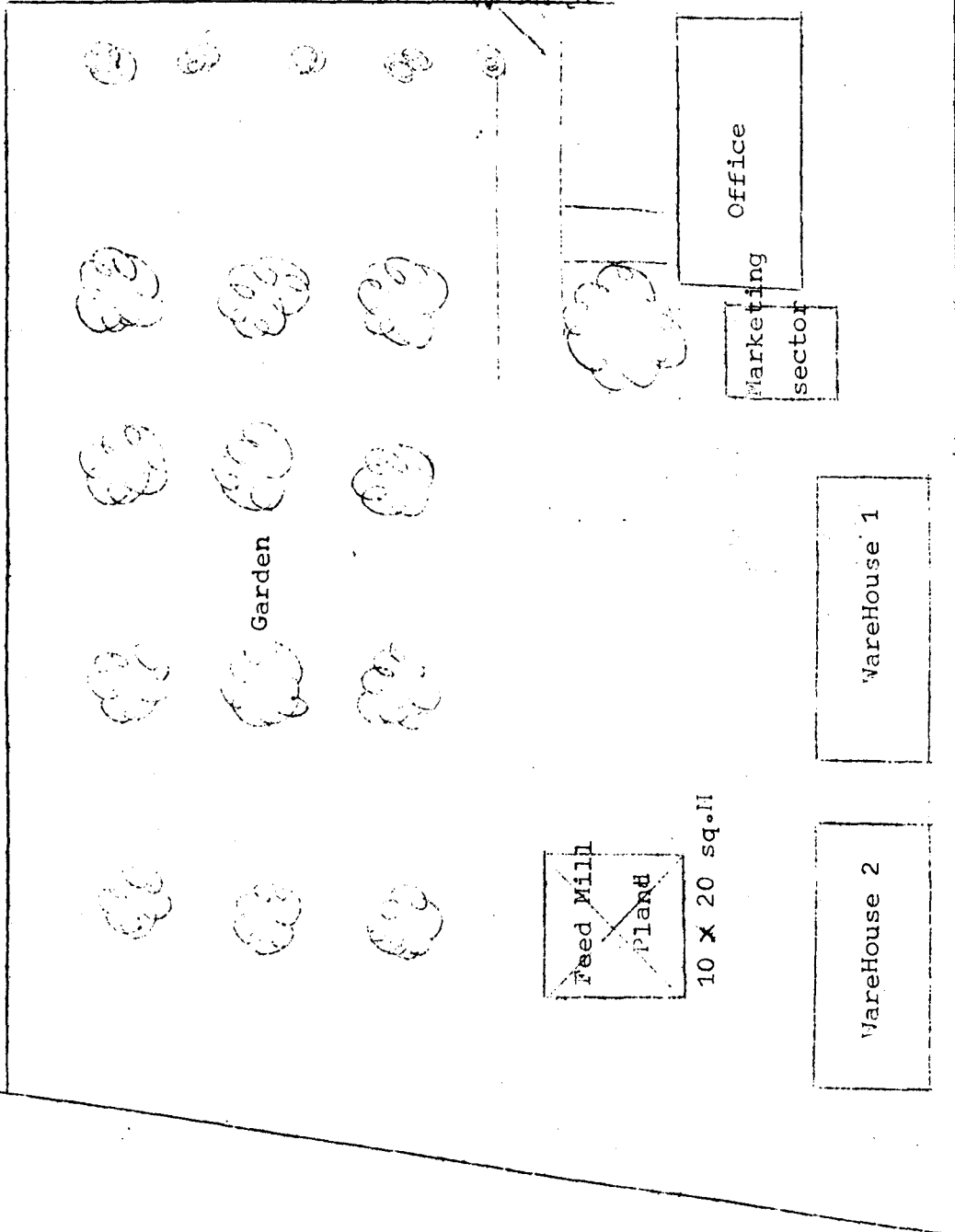




Figure 1- Feed Mixer, Vertical Type

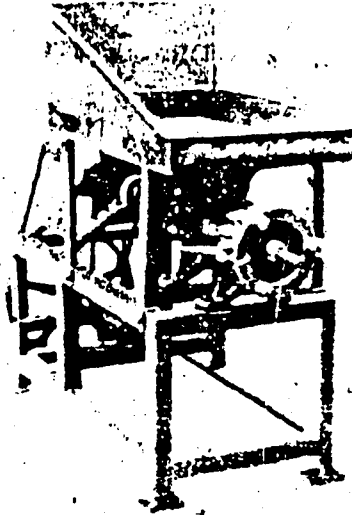
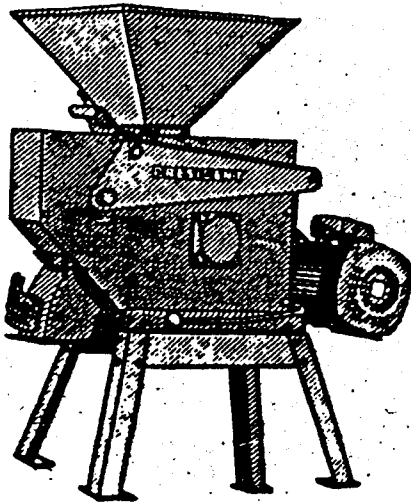


Figure 2 Grinder ; Hammer Mill Type and Wincer Type

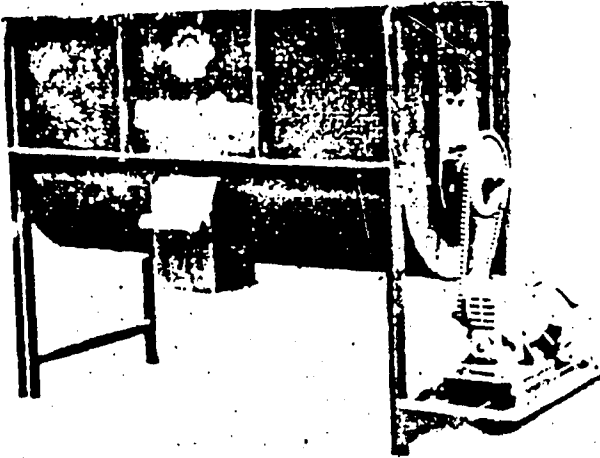


Figure 3, Feed Mixer; Horizontal Type

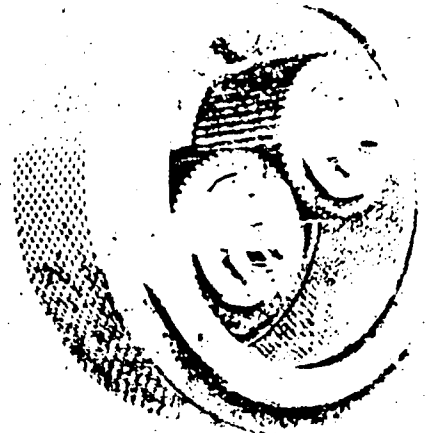
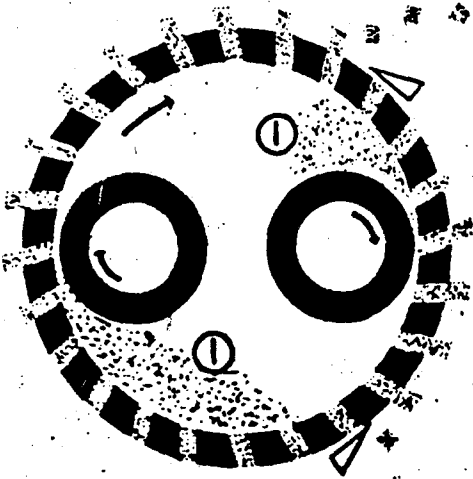


Figure 4 (A) Show How the Pelleting Machine work  
(B) Detail of pelleting circle and Roller

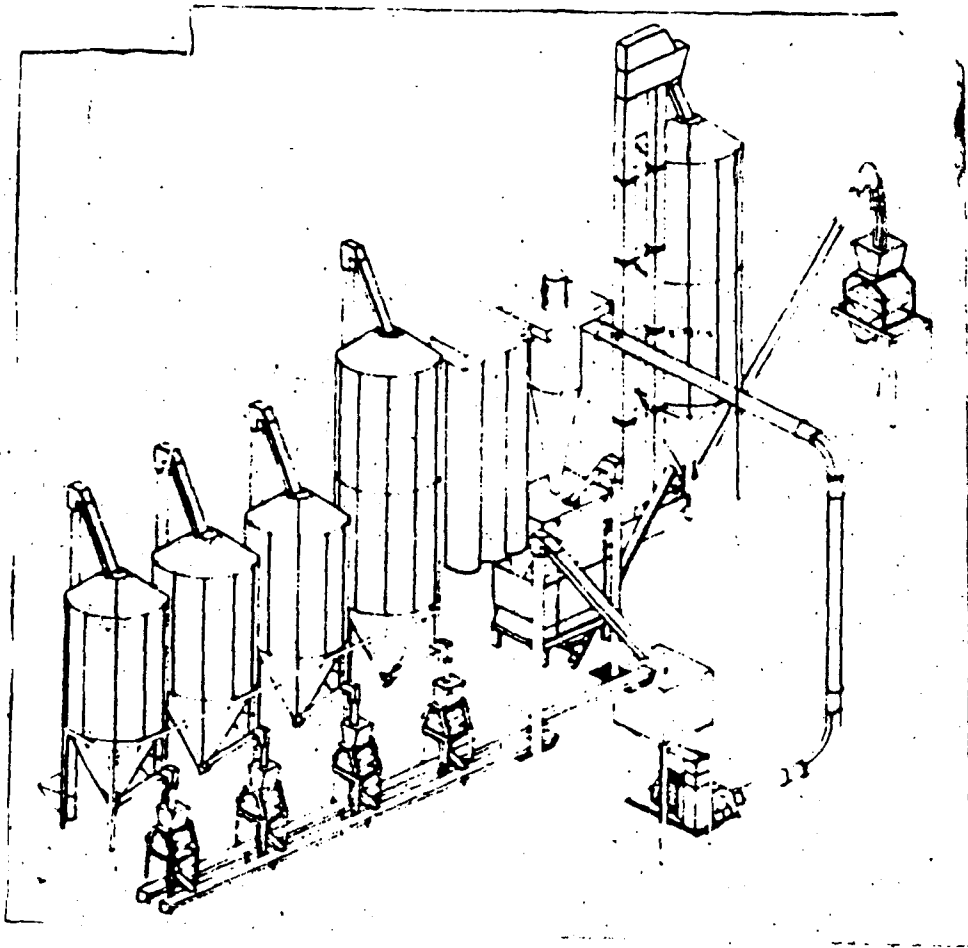
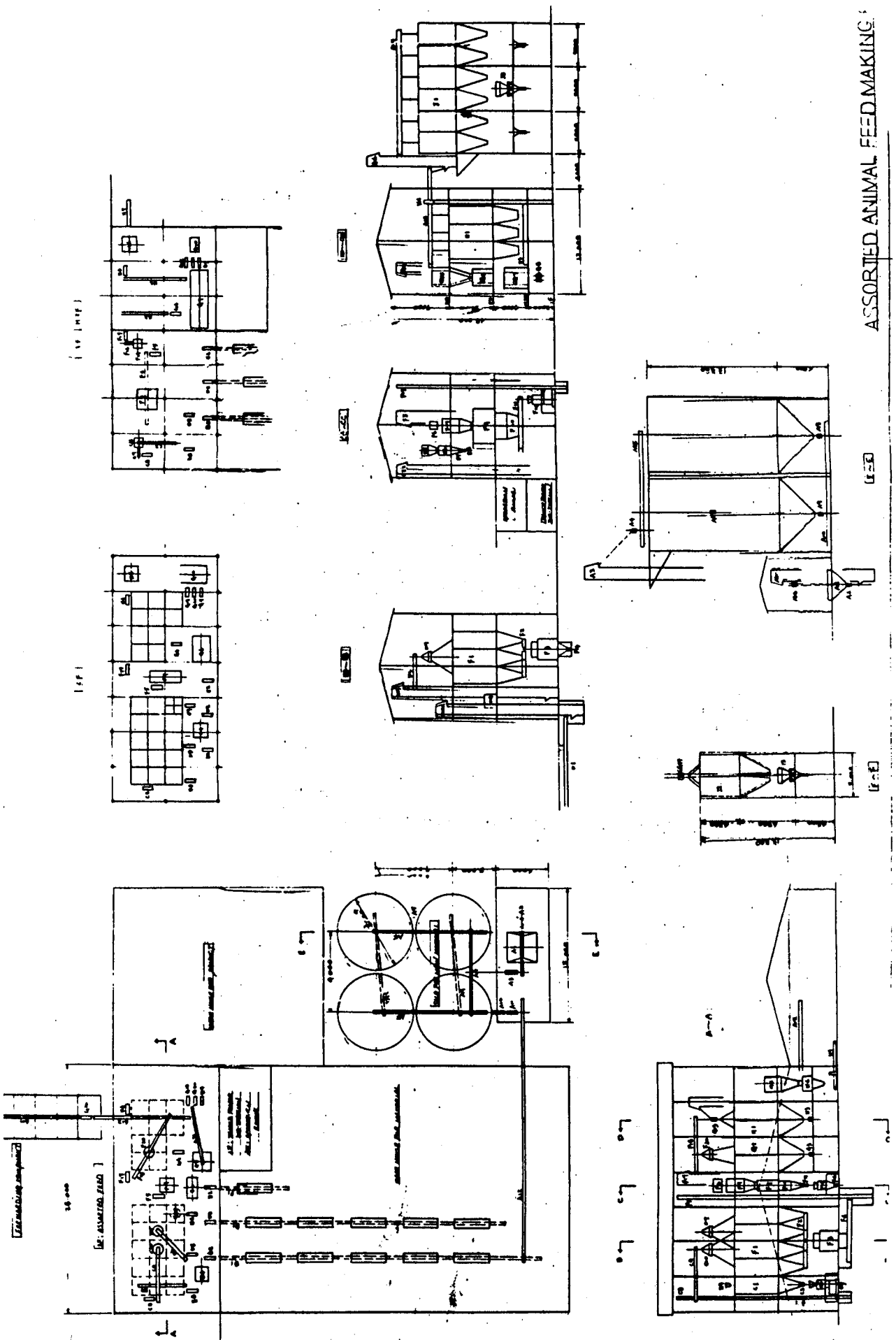


Figure 5 - Feed Mill Medium scale ; Capacity 3 - 6 MT/day  
with Packing machine



ASSORTED ANIMAL FEED MAKING

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